2013
Hexastylis naniflora (Dwarf-flowered heartleaf)
Former U-2528AA (Current TIP No. R-9999L)
Inventory and Monitoring Report
Catawba County, North Carolina

Contact Person:

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Species: *Hexastylis naniflora* (Dwarf-flowered heartleaf)

Site: [Former U-2528AA] (Catawba County)

NC NHP EO number(s): 32, EO ID 14983

NCDOT Point of Contact (POC): Tim Bassette

Signed ROW occurrence? No **Site management plan**: N/A

Site protections: The northern subpopulation of this occurrence (76 plants, June 18, 2013 survey) is situated within the existing North Carolina Department of Transportation (NCDOT) right-of-way of I-40. This portion of the occurrence, however, is a roadside population that is not under formal protection from a binding agreement. The remainder of the occurrence, which sits outside of the existing NCDOT right-of-way, is also not under any formal protection from a binding agreement.

Origin of species at this site: Native

Status of species at this site: Extant

Species short-term trend at this site (relative to last count): Declining

Species long-term trend at this site (averaged over multiple counts): Declining

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Status of NCDOT commitments pledged during ESA Section 7 consultations:

A. **NCDOT project ID:** R-9999L, Murrays Mill Conservation Area (formerly U-2119)
USFWS log number: 4-2-95-102

On August 3, 1995 the U.S. Fish and Wildlife Service (Service) issued a Biological Opinion (BO) pertaining to projects B-2119, U-2307, and U-2528AA. The BO was issued in response to a request to initiate formal consultation for the referenced projects on July 20, 1995. Per the BO, NCDOT made the following environmental commitments (pgs. 5-6):

- The NCDOT will pursue purchasing land in fee title (or conservation easement) from willing sellers to establish a preserve of approximately 11.9 ha (29.4 acres) in the Murray's Mill area.

Status: On May 1, 1996, the NCDOT purchased 25.07 acres (Tract 1) and an additional 8.61 acres on the adjacent Bowman Tract (Tract 2) on March 13, 2006.

- The preserve will be conveyed to another responsible entity (such as the Catawba County Historical Association of Catawba County) with an accompanying agreement or deed restriction that the existing plant population be protected in perpetuity.

Status: Currently NCDOT still holds the title to the site but is working toward the transfer of ownership and stewardship responsibilities to the Catawba County Historical Association. The NCDOT has developed a draft conservation plan which outlines the management of the Murray's Mill Conservation Area for the perpetual conservation of the *H. naniflora*.

- The NCDOT and Federal Highway Administration have also agreed that if establishing a preserve in the Murray's Mill area is not feasible, they will pursue establishing a preserve of similar size and quality (with regards to plant population density and size) at another location in North Carolina, as agreed upon by the Service.

Status: As of March 13, 2006 the NCDOT completed the purchase of the Murray's Mill tracts which met and exceeded the necessary 11.9 hectare (29.4 acres) commitment.

- If the entire 11.9 hectare area, as committed in the Assessment, is not protected through fee title or conservation easement, then Project U-2528AA will be dropped from the Programmatic Section 7 Consultation and will need to be addressed at a separate consultation at a future date.

Status: As mentioned in the status of the commitment above, the NCDOT purchased more than the requisite 11.9 hectares.

- Some transplanting of *H. naniflora* individuals to protected sites, or possibly even the collecting of individuals for Center for Plant Conservation-approved of botanical gardens, may be carried out, but will be the sole responsibility of the Service. Any transplanting efforts will be conducted with prior coordination with NCDOT.

Status: To-date, no transplanting or collecting of individual plants has been coordinated.

- The Service has agreed that if the above mentioned preserve is established, and Project U- 2528AA is dropped (not constructed), the NCDOT may substitute another project involving *H. naniflora* contingent upon Service approval. The Service will evaluate such criteria as plant population size, habitat quality, landscape context (e.g. rural. urban), proposed impacts to the plant population, etc. in making a decision on substituting another NCDOT project.

Status: The option for NCDOT to substitute another project is no longer viable because U- 2528AA has been constructed.

- Assisting the Service in answering questions that arose during the recent 5-year status review for the species.

Status: Every two years for no more than a six year period, the NCDOT will monitor all occurrences associated with 14 NCDOT projects where *H. naniflora* was found in the right-of-way, of which Murray's Mill is one. Environmental baseline data will be obtained and will include both quantitative and qualitative analyses. Specifics of the five year review assistance are detailed in the Service's R-2824 (Proposed Upgrade of Lovelady Road) BO letter to NCDOT dated November 13, 2009.

B. NCDOT project ID: TIP No. R-2824 (Upgrade of Existing Lovelady Road (SR 1546) from Laurel Street (SR 1545) in Valdese to Malcolm Boulevard (SR 1001) in Rutherford College, Burke County, North Carolina.
USFWS log number: 4-2-09-367

From pages 31-34 of the Biological Assessment for TIP R-2824 (May 8, 2009), and Appendix B of the BO for the same project (November 13, 2009), NCDOT committed to assist the Service with the five-year review process by providing information about several populations of *H. naniflora* that are either held in conservation easements or occur within NCDOT right-of-way. (This assistance serves as a conservation measure for R-2824.) The population of *H. naniflora* associated with U-2528AA is included in this group.

Because *H. naniflora* is partially located within the right-of-way of U-2528AA, NCDOT will monitor Element Occurrence (EO) No. 32 that is associated with U-2528AA, the results of which will be incorporated into the data spreadsheet, submitted to the Service annually on January 1. Information generated by the following activities will be included in the spreadsheet.

Every two years for no more than six years, NCDOT will:

- Enumerate plants via direct count and/or sample plot estimates.
- Delineate changes to the population boundary using Global Positioning System/Geographic Information System, computing changes to acreages of occurrence areas, computing *H. naniflora* plant densities for each occurrence, and estimating changes to acreages of suitable habitat areas.
- Perform a qualitative analysis to include estimating the population viability, phenology, and evidence of reproduction; identifying associate species; identifying invasive, exotic species and documenting their degree of threat; and assessing the topographic position, moisture regime, amount of sunlight reaching *H. naniflora* plants, as well as other natural and human threats to the species, including but not limited to stream bank erosion, all-terrain vehicles, effects from historical herbicide applications and the lack of such applications in the future, effects from drought or excessive precipitation, and land clearing and draining activities.
- Prepare a North Carolina Natural Heritage Program (NCNHP) - Endangered and Rare Plant Field Survey Form that incorporates both types of data.
- Analyze population trends by comparing recent size estimates to data from previous years.

Status: This monitoring report documents the second of three post-construction monitoring efforts associated with EO No 32 along the former TIP U-2528AA.

Status of terms and conditions from applicable NC Plant Conservation Program permits:

No applicable permits from the NC Plant Conservation Program have been applied for or been issued for this project.

Discretionary actions undertaken by NCDOT and partners:

From page 2 of the former TIP U-2528AA BO issued May 10, 2001; conservation recommendations included:

(1) The agreement (or deed restriction) will include a provision that any management recommendations we make will be implemented, if resources are available, and that access into the preserve will be granted for our representatives and representatives from State resource agencies with prior notification to the owner.
Status: Management recommendation in the form of a draft conservation plan for the Murray's Mill Conservation Area has been approved by the Service, NCNHP and NCDOT but not the Catawba County Historical Association.

(2) The deed for the acquired site will identify that this area was purchased for conservation purposes.
Status: It is not NCDOT policy to place deed restrictions on properties purchased fee simple. To ensure this property remains protected in perpetuity all sites purchased or maintained by NCDOT for threatened and endangered species mitigation are placed on the existing Natural Environment Section's (NES) Mitigation GeoDatabase. This geo-referenced database includes the location and boundaries of NCDOT fee simple owned mitigation sites as well as all mitigation sites that are held in Conservation Easement. This database is provided to and accessible to the public as a record of mitigation sites and their attributes, including permit conditions and prohibited activities. Information including new mitigation sites or changes in status to sites is updated at a minimum quarterly or more often as updates are needed. (http://www.arcgis.com/home/item.html?id=d560dfeb1ea443b299ca7fc68b2506b4)

(3) The Service's Asheville Field Office will be notified at least one month in advance of the start of construction for all three projects to allow an opportunity to transplant specimens from project impact areas.
Status: None of the *H. naniflora* specimens found along the former U-2528AA project have ever been, or are anticipated to be, transplanted to another area.

-No other discretionary activities (i.e. rescue, relocation, augmentation or management) other than what is listed above have been or are anticipated to be undertaken by NCDOT and its partners.

References

North Carolina Department of Transportation. 2011 Conservation Plan for Murray's Mill Conservation Area. Catawba County, North Carolina. DRAFT.

North Carolina Department of Transportation. 1995 Dwarf-Flowered Heartleaf. Programmatic Section 7 Consultation for T.I.P. Projects: B-2119, U-2307 & U2528AA, Catawba County, North Carolina. 4pp.

North Carolina Department of Transportation. 2001 Re-initiation of Section 7 consultation for impacts to the Federally Threatened Dwarf-Flowered Heartleaf.

North Carolina Natural Heritage Program. 2005. Endangered and Rare Plant Field Survey Form. Raleigh, NC. www.ncnhp.org.

North Carolina Department of Transportation. 2009. Biological Assessment for the Proposed Upgrade of Lovelady Road TIP No. R-2824, in Burke County, North Carolina.

United States Fish and Wildlife Service. 2009. Biological Opinion: *Proposed Upgrade of Lovelady Road, TIP No. 2824, in Burke County, North Carolina, and Its Effects on the Federally Threatened Dwarf-Flowered Heartleaf.* Log Number 4-2-09-367.

United States Fish and Wildlife Service. 1995. *Biological Opinion of the US Fish and Wildlife Service Concerning the Effects of Construction of Three NC Department of Transportation Projects in Catawba County on the Federally Threatened Dwarf-flowered Heartleaf.* Log Number 4-2-95-102.

United States Fish and Wildlife Service. 2001. Amendment to the *Biological Opinion of the US Fish and Wildlife Service Concerning the Effects of Construction of DOT Project TIP U-2528AA in Catawba County on the Federally Threatened Dwarf-flowered Heartleaf.* Log Number 4-2-95-102.

Appendix A. Monitoring Data & Discussion

Census counts were conducted by RK&K biologists Hal Bain and Pete Stafford on June 18, 2013. This census was a direct count following the method used during the 2011 survey. Figures 1 and 2 depict EO 32 as determined during the 2013 monitoring period. Plant survey results are documented in Table 1 for 1995, 2000, 2011, and 2013.

Table 1. *Hexastylis naniflara* (NHP EO Number 32) by quadrant of former TIP No. U-2528AA

Quadrant of I-40 Interchange	1995			2000			2011			2013		
	Size (acre)	No. Plants	Density (plant/ac)	Size (acre)	No. Plant	Density (plant/ac)	Size (acre)	No. Plants	Density (plant/ac)	Size (acre)	No. Plants	Density (plant/ac)
Northeast	0.2	250	1,250	0.2	N/A*	N/A	0	0	N/A	0	0	N/A
Southeast	3.3	6200	1,878	3.3	6200	1,878	2.1	820t	390	2.1	734	350
Northwest	No Info Available	None discovered:¡:	N/A	No Info Available	100	N/A	0	0	N/A	0	0	N/A
Southwest	No Info Available	None discovered:¡:	N/A	No Info Available	30	N/A	0	0	N/A	0	0	N/A
Totals	**3.5**	**6450**	**1843**	**3.5**	**6330**	**<1809**	**2.1**	**820**	**390**	**2.1**	**734**	**350**

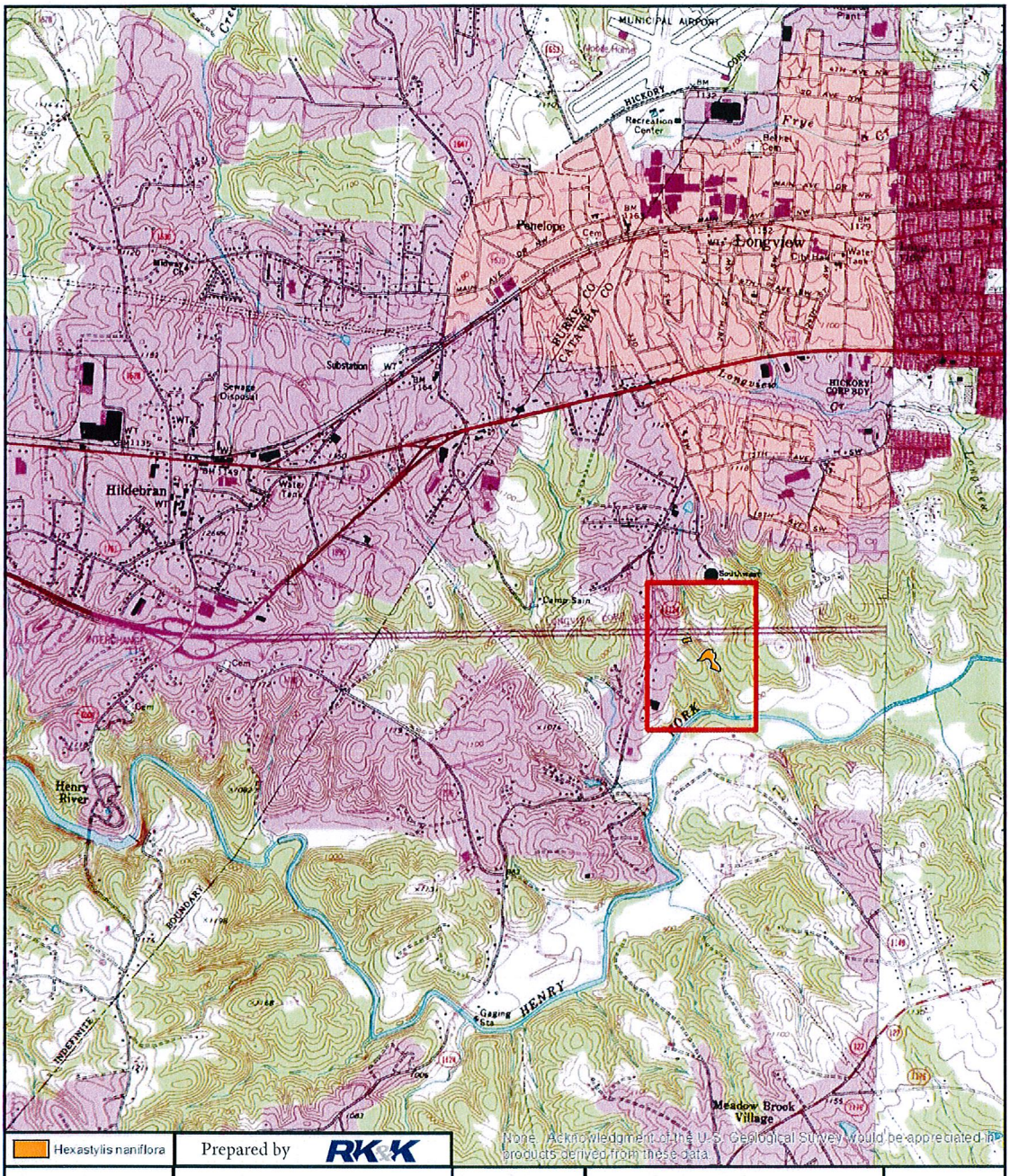
* The 2000 survey was initiated to accommodate a design change. The design in the northeast quad was changed in 2000 to a loop nested in the northwest ramp thus eliminating impacts to entire northeast quad (250 plants). Because baseline data was already available from 1995, no further surveys were conducted in 2000 in the northeast and southeast quads. However, surveys in the northwest and southwest quads revealed additional plants there. On March 22, 2007 & May 3, 2011 NCDOT biologists conducted surveys in the northeast quad. It was determined that *H. naniflora* no longer exists in that quad because of poor habitat which has been overtaken by the invasive *Pueraria lobata* (kudzu).
t The methods for enumerating plants were inconsistent between baseline estimates (1995 & 2000) and the 2011 census count.
Beginning with the first monitoring phase in 2011, methods will remain consistent to allow for better ability to track population trends.
:j: The original 1995 survey revealed no plants in the northwest and southwest quads.

Methods for enumerating plants were inconsistent between years. In 2011, plants were enumerated via direct census count; however baseline surveys prior to 2011 were conducted using sample plots and estimating density using a subset of the population. Beginning with the first monitoring phase in 2011, methods remain consistent to allow for better ability to track population trends in the future. The delineated plant area was unchanged from the 2011 survey.

Although a true long term trend analysis between the 1995 and 2013 surveys cannot be performed due to the discrepancies in survey methods discussed above, casual observations at each quad reveal that the number of plants and the density of the populations have decreased or have been completely eradicated since pre-construction. Direct and indirect adverse effects from this project included disturbance from construction activities, effects of population fragmentation and a partial clear cut of the northwest quad severely degrading the population in that portion of the project area. Furthermore, it was noted in the U-2528AA BOs (August 3, 1995 & May 10, 2001) that the ensuing development resulting from project completion would likely eliminate a large portion if not all of the occurrence.

The short term trend for this population (EO 32) is declining. The 2011 survey resulted in a population density of 390 plants per acre (820 total plants) and the 2013 survey resulted in a density of 350 plants per acre (734 total plants), representing a 10.5% decrease. Field survey staff could not ascertain the cause of population decline as there were no visible reasons.

Appendix B. Figures





Prepared for NCDOT 6/29/15

Former TIP U-2528AA
Monitoring of Hexastylis naniflora
Natural Heritage Program EO 32

0 87.5 175 Feet

FIG 2

Appendix C. North Carolina Natural Heritage Program - Endangered And Rare Plant Field Survey Form
Return form to: N.C. Natural Heritage Program, 1601 MSC, Raleigh, NC 27699-1601. Visit www.ncnhp.org.

Species: *Hexastylis naniflora* **Common name**: Dwarf-flowered Heartleaf **Survey date**: 06/06/13

EO Number (if updating existing EO): 32 **County**: Catawba **7.5' Quad Map**: Longview, NC

Coordinates (if known): **Elevation**: 900'to 1000'
If coordinates given, indicate coordinate system and datum (State Plane 1927 or 1983, UTM, etc):

Site Name (if this is within previously identified site): Former TIP No. U-2528AA (Current TIP R-9999L)

Site location and directions: From westbound interstate I-40 take exit 121. From the top of exit ramp, turn right onto Old Shelby Rd. Travel 0.3 mile and turn left onto Sweet Bay Ln. Travel 0.2 mile and E032 is located on both sides of the road. (attach copy of map with site marked or use back of form to draw a sketch of the site):
See attached Figures 1 and 2.

Number of individuals: 734 (direct count) **Define individual** (stem, clump, etc.): Rosettes and stems

Size of area in which population occurs: 2.3 acres

Estimate whether the entire population was surveyed, or only a portion: Entire

Estimated Population Viability (circle one): Excellent Good Fair Poor Unknown Failed to find
Population Viability Comments: Young plants and flowers observed during survey.

Phenology (include % or # in each stage): vegetative N/A bud N/A flower N/A

Evidence of reproduction: fruit N/A seedlings N/A clonal/vegetative N/A

Reproduction Comments: Young plants observed during survey.

Habitat (NC NHP natural community name and description, if known; include quality, soils, geology, etc.): Dry-Mesic Oak-Hickory Forest. Mapped soils include Clifford sandy loam, Fairview gravelly fine sandy loam. This EO consists of medium quality habitat.

Associated species: The canopy is dominated by *Pinus taeda, Quercus alba, Q. rubra, Carya glabra, Acer rubrum, Liriodendron tulipifera*, and *Fagus grandifolia*. The understory consists of *Juniperus virginiana*, *Pinus taeda, Carpinus caroliniana, Oxydendrum arboretum, Acer rubrum, Cornus florida, Ilex opaca*. The shrub layer includes *Rhododendron* sp. and *Rubus* sp. Woody vines included *Vitis rotundifolia, Smilax* sp., and *Toxicodendron radicans*. The herb layer is sparse to moderately dense and includes *Hexastylis naniflora*, *Goodyera pubescens*, and *Tipularia discolor.*

Invasive species noted & degree of threat from invasive species: *Lonicera japonica, Ligustrum sinense, Albizia julibrissin*

Area of apparently suitable habitat (suitable for, but not necessarily occupied by the species): Approximately 3+ acres. Habitat potentially suitable south of population area and north of Henry Fork along UT to Henry Fork.

If the population is within a Right-of-Way, does suitable habitat exist outside Right-of-Way? Yes

Topographic position (examples: crest, mid slope, alluvial, etc.): Top to bottom of slope

Moisture regime (examples: inundated, dry, seasonally wet, etc): Dry-mesic

Light (examples: open, woodland, closed canopy, etc): Woodland

Other information: Population located north of Sweet Bay Ln. is oriented as north facing (N). Population south of Sweet Bay Ln. is facing east-northeast (ENE).

Protection / management needs and opportunities: This population could be evaluated for a conservation easement.

Landowner(s), if known: North of Sweet Bay Ln. – NCDOT. South of Sweet Bay Ln. – Arthur William Anderson

Person making this report, Address, & Phone: Pete Stafford, RK&K Consulting Engineers
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Other observers: Hal Bain, RK&K

Specimens collected? None **Collection #**: N/A **Repository**: N/A
(permits are required for federal or state listed species)

Draw sketch below or attach map.

See attached Figures 1 and 2.

Num	Rank	Site or location	County	Last OBS
Hexastylis naniflora		**G3 S3 LT T**		
23.000	A	Mill Creek Forest and Seep	NCPOLK	2016-05-13
29.000	A	Island Creek Heath Bluff	NCBURK	2016-05-24

96.000	A	Murrays Mill/Upper Balls Creek Natural Area	NCCATA	2013-10-30
96.038	CD	Catawba River: Deal Property (Sub EO of EO 096)	NCCATA	1996-06
96.039	D	Murrays Mill/Upper Balls Creek Natural Area	NCCATA	2002-04-18
96.184	A	Murrays Mill/Upper Balls Creek Natural Area	NCCATA	2013-10-30
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99.000	A	Big Horse Creek Rare Plant Site	NCRUTH	2015-05-19
99.009	AB	Hensons Creek Natural Area	NCRUTH	2005-03-05
99.010	A	Kudzu Farm Rare Plant Site	NCRUTH	2014-05-20
99.037	C	Broad River: Hunter Road (Sub EO of EO 099) ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2005
99.052	C	Hensons Creek Natural Area	NCRUTH	2005-03
99.053	D	Broad River: McKinney Bridge (This is a sub EO of 099).	NCRUTH	2003-05
99.055	AB	Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake (Sub EO of EO 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2016-05-25
99.061	B	Broad River: Unnamed tributary at SR 1115 & 1116 (This is a sub EO of 099).	NCRUTH	2002-02-03
99.062	C	Broad River: Richardson Creek, tributary about 0.9 mile up stream from its confluence with the Broad River (Sub EO of 099).	NCRUTH	2002-04-21
99.063	D	Broad River: Hayes Lake (This is a sub EO of 099).	NCRUTH	2001-07-31
99.075	A	Brice Rare Plant Site	NCRUTH	2013-07-17
99.076	BC	Big Horse Creek Rare Plant Site	NCRUTH	2015-05-19
99.079	C	Broad River: Richardson Creek, Riverside Church (This is a sub EO of EO 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2012-05
99.090	D	Broad River: Richardson Creek, tributary near SR 1122 (this is a sub EO of 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2003-03-02
99.121	B	Broad River: Dills Creek, unnamed tributary west of the creek (Sub EO of EO 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2004-05-15
99.172	D	Big Horse Creek Rare Plant Site	NCRUTH	2012-03-12
99.181	AB	Broad River: Dills Creek, unnamed tributary south of Kudzu Rare Plant Site (sub EO of 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2012-Spring
99.182	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.249	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.250	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.251	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.267	CD	Kudzu Farm	NCRUTH	2006-07-06
99.268	D	Kudzu Farm	NCRUTH	2006-07-06
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EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
100.000	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-17
100.014	C?	Broad River/Sandy Run Natural Areas	NCCLEV	2009-06
100.049	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-28
100.050	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-02
100.051	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-11
100.073	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-11
100.074	B	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-12
100.149	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-15
100.233	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-01
100.235	CD	Broad River: Tributary N of Broad River and SE of Lake Houser	NCCLEV	2001
100.236	C	Broad River/Sandy Run Natural Areas	NCCLEV	2001
100.237	E	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-15
100.238	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-17
100.239	D	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-28
100.240	F	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-17
100.241	D	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-03
100.246	D	Broad River/Sandy Run Natural Areas	NCCLEV	2001
–				
118.000	A	Big Island Carolina Hemlock Bluff	NCRUTH	2004-08-06
125.000	A	New Hope Springhead Swamp	NCPOLK	2016-05-13

176.000	A	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2016-05-20
176.167	A	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2005-04-06
176.168	A	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2005-03-30
176.169	D	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2016-05-18
176.170	C	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2016-05-18
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177.000	A	Broad River: Floyds Creek, Long Branch (Parent EO of sub EOs: 016, 107, 122, 163,164,165,& 166) ; USFWS Flex Fund Monitoring Site 9 including sub records 16, 107, 163, 164, 165, 166	NCRUTH	2016-05-11
177.016	E	Broad River: Floyds Creek, Long Branch (Sub EO of EO 177) ; NCDOT Transplant location ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2014-05-20
177.107	B	Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & SW of US 221 (sub of 177). ; NCDOT R-2233 A and B ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2008
177.122	B?	Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & NE of US 221 (sub of 177). ; NCDOT TIP: R-2233	NCRUTH	2008
177.163	B	Broad River: Floyds Creek, Long Branch, headwaters near Shiloh (Sub of 177). ; NCDOT TIP: R-2233 ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2016-05-11
177.164	A	Broad River: Floyds Creek, Long Branch, unnamed tributary 1.2 mile NW of Danieltown (Sub of 177) ; NCDOT TIP: R-2233A&B ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2016-05-11

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
177.165	C	Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown (Sub of 177). ; NCDOT TIP: R-2233 ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2005-04-05
177.166	CD	Broad River: Floyds Creek, Long Branch, tributary 1.7 miles NW of Danieltown and NE 0.3 mile from US 211 (Sub of 177). ; NCDOT TIP: R-2233 ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2005-03-31
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178.000	A	Catawba River: Hoyle Crk-Micol Crk, Lovelady (parent EO of 159, 160, 161, 254, 255, 256, 280-284)	NCBURK	2013-05-14
178.159	A	Catawba River: Hoyle Crk-Micol Crk, Micol Creek tibutary near SR 1547 (Sub EO of 178) ; NCDOT TIP: B-3621 bridge replacement on SR 1547 over Michol Creek ; NCDOT TIP: R-2824	NCBURK	2013
178.160	A	Catawba River: Hoyle Crk-Micol Crk, Lovelady 2 (east) (Sub EO of EO 178). ; NCDOT TIP: R-2824 SR 1546 Lovelady Road	NCBURK	2013-05-14
178.161	A	Catawba River: Hoyle Crk-Micol Crk, Lovelady 1(west): (Sub EO of EO 178). ; NCDOT TIP: R-2824 SR 1546 Lovelady Road	NCBURK	2009-04-07
178.254	D?	Catawba River: Hoyle Crk-Micol Crk, E bank of Hoyle Creek, East Burke High School Transplant Area (Sub EO of EO 178)	NCBURK	2010-05-26
178.255	D	Catawba River: Hoyle Crk-Micol Crk, ravine E of Hoyle Crk, East Burke High School (Sub EO of EO 178)	NCBURK	2006-06
178.256	C?	Catawba River: Hoyle Crk-Micol Crk, tributary E of Hoyle Crk, East Burke High School transplant area (Sub EO of EO 178)	NCBURK	2010-05-26
178.280	C	Catawba River: Hoyle Creek, Lovelady 9 (Sub EO of EO 178) ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.281	E	Catawba River: Hoyle Crk-Micol Crk, Lovelady 12 and 13 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.282	E	Catawba River: Hoyle Crk-Micol Crk, Lovelady 10 and 11 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.283	E	Catawba River: McGalliard Creek, Lovelady 14 and 15 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.284	E	Catawba River: McGalliard Creek, Lovelady 16 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.310	A	Mcgalliard Creek Slopes; Lake Rhodhiss	NCBURK	2016-04-05
–				
208.000	A	Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Sites 32-35 (TIP R-2707, R-2824) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2012-03-15

211.000	A	First Broad Hop-Hornbeam Natural Area	NCCLEV	2002-04-26
211.072	D	First Broad Hop-Hornbeam Natural Area	NCCLEV	2002-04-26
211.194	A	First Broad River: unnamed tributary, Shelby Bypass Sites 10, 11, & 12 (Sub EO of EO 211) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-11-01
–				

214.000	A	Buffalo Creek: Tributaries N and S of SR 2047 (parent EO of sub EOs: 201-205, 209, 212, and 213)	NCCLEV	2012-03-15
214.201	D	Buffalo Creek: Tributary S of SR 2047, BYP Sites 26 & 27 (Sub EO of EO 214) ; NCDOT TIP: R-2707	NCCLEV	2000-10-25
214.202	A	Buffalo Creek: Ravine north of SR 2047, BYP site 24 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-25

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
214.203	B	Buffalo Creek: 3rd Tributary S of SR 2947, BYP Sites 28 and 29 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2007-04-10
214.204	A?	Buffalo Creek: S of SR 2128/Johnson Rd, proposed Shelby Bypass site 31 (Sub EO of EO 214). ; NCDOT TIP: R-2707	NCCLEV	2000-10-03
214.205	D	Buffalo Creek: North of SR 2128/Johnson Rd, BYP Site 30 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-03
214.209	BC	Buffalo Creek: Tributary E of the County Fairgrounds, BYP Site 22 (Sub EO of EO 214) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-26
214.212	D	Buffalo Creek: Slope along Tributary just N of SR 2047, BYP Site 23 (Sub EO of EO 214). ; NCDOT TIP: R-2707	NCCLEV	2000-10-26
214.213	CD	Buffalo Creek: Ravine just S of SR 2047, BYP Site 25 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2012-03-15
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216.000	A	Buffalo Creek: Kings Mountain Reservoir:, tribs N & S of SR 2068 & E of US 180 (parent of 28, 197-200)	NCCLEV	2016-08-03
216.028	B	Buffalo Creek Rare Plant Site	NCCLEV	2016-08-03
216.196	D	Buffalo Creek: Friendship Chapel and tributary to Catawba River (Sub of 216) ; NCDOT TIP: R-2707	NCCLEV	2006-04-29
216.197	A	Buffalo Creek: Kings Mountain Reservoir, tributary N of SR 2068, BYP Site 13 (Sub EO of 216). ; NCDOT TIP: R-2707	NCCLEV	2000-11-01
216.198	B	Buffalo Creek: Kings Mountain Reservoir, tributary S of SR 2086; BYP Site 14 (Sub of 216) ; NCDOT TIP: R-2707	NCCLEV	2007-04-10
216.199	B	Buffalo Creek: Kings Mountain Reservoir: tributary E of US 180, BYP Sites 15-19 (Sub of 216). ; NCDOT TIP: R-2707	NCCLEV	2007-04
216.200	D	Buffalo Creek: Kings Mountain Reservoir, Tributary N of SR 2033, BYP Sites 20 &21 (Sub EO of 216) ; NCDOT TIP: R-2707	NCCLEV	2000-04-10
–				
227.000	A	Peaked Top Rare Plant Site	NCCALD	2014-04-19

247.000	A	New Bethel Rare Plant Site	NCRUTH	2015-04-23
247.013	D	Sandy Mush Outcrop	NCRUTH	2005-05
247.056	D	Broad River: Floyds Creek (sub EO of EO 247)	NCRUTH	2002-04-21
247.080	D	Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 and S of SR 2125 (sub of 247)	NCRUTH	2012-07
247.106	A	New Bethel Rare Plant Site	NCRUTH	2015-04-23
247.114	D	Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and N of SR 2125 (sub EO of 247) ; NCDOT TIP: R-2233	NCRUTH	2010-01-27
247.115	C	Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and S of SR 2125 (Sub of 247).	NCRUTH	2005-04
247.173	D	Broad RIver: Floyds Creek, tributary between Floyds Church and Jerusalum Church (Sub of 247). ; NCDOT TIP: R-2233 ; NCDOT TIP: R-2824	NCRUTH	2005-04
247.174	D	Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 & N of SR 2125 (sub EO of 247). ; NCDOT TIP: R-2233	NCRUTH	2010-01-27
247.286	B	New Bethel Rare Plant Site	NCRUTH	2015-04-22
–				
276.000	A	Cliffside Steam Station ; South Shore Cliffside Steam Station Ash Basin Transplant ; USFWS Flex Fund Monitoring Site 7	NCCLEV NCRUTH	2016-06-20

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
302.000	A	Rhyne Conservation Preserve	NCLINC	2016-05-05
302.047	D	NC DOT project R-617C ; South Fork Catawba River: tributary at NC 150 (Sub EO of EO 302)	NCLINC	2005-05-11
302.262	A	Rhyne Conservation Preserve	NCLINC	2016-05-05
–				
311.000	A	Collinsville (Hughes) Creek Slopes	NCPOLK	2016-08-04
312.000	A	Richardson Creek tributary above Toms Lake	NCRUTH	2016-08-03

232.000	A?	Buffalo Creek Rare Plant Site	NCCLEV	2012-03-16
232.046	A	Buffalo Creek Rare Plant Site	NCCLEV	2005-11-15
232.231	D	Buffalo Creek Rare Plant Site	NCCLEV	2012-03-16
–				
274.000	A?	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-03
44.000	AB	Little Gunpowder Creek Rare Plant Site 1	NCCALD	2011-05-02
157.000	AB	First Broad River: Crooked Run Creek, tributary near SR 1519 ; NCDOT Division 12 project at SR 1519 ; NCDOT TIP: R-2824	NCCLEV	2010-12-01

243.000	AB	Jacob Fork West Corridor	NCCATA	2012-07
243.012	A	Jacob Fork West Corridor	NCCATA	1995
243.242	D	Jacob Fork West Corridor	NCCATA	2005-05
243.269	B	Jacob Fork West Corridor	NCCATA	2007
243.270	C?	Jacob Fork West Corridor	NCCATA	2012-07
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245.000	AB	Floyds Creek Tributary Rare Plant Site	NCRUTH	2010-01-27
245.091	D	Broad River: Floyds Creek and SR 1116 (sub EO of EO 245)	NCRUTH	2012-07
245.113	C	Floyds Creek Tributary Rare Plant Site	NCRUTH	2010-01-27
245.175	C	Floyds Creek Tributary Rare Plant Site	NCRUTH	2010-01-27
–				
287.000	AB	Fox Knoll Farm	NCPOLK	2016-08-04
303.000	AB	Smith Cliff/Henry Fork River	NCBURK	2015-04-28

217.000	B	Broad River: Brushy Creek, Tributaries N of SR 1308 and E of NC 226, (parent EO of Sub EOs 190,191,192,193, & 305).	NCCLEV	2015
217.190	F	Broad River: Brushy Creek,Tributary just north of CSX rail line, BYP Site 4 (Sub EO of EO 217). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-27
217.191	D	Broad River: Brushy Creek, Tributary north of SR 1308, BYP Sites 5,6,&7 (Sub EO of EO 217) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2014
217.192	C	Broad River: Brushy Creek, Ridge south of Creek, BYP Site 8 (Sub EO of EO 217) ; NCDOT TIP: R-2707	NCCLEV	2000-10-27
217.193	C	Broad River: Brushy Creek, Ridge southwest of creek, near NC 226, BYP site 9 (Sub EO of 217) ; NCDOT TIP: R-2707	NCCLEV	2000-10
217.305	CD	Washburn Switch Business Park	NCCLEV	2015-09-16
–				

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
226.000	B	Catawba River: Lake James (parent EO of Sub EOs: 045, 222, 223, 224, and 225)	NCBURK	2006-10-25
226.045	D	Catawba River: Lake James, near SR 1223 Bridge (sub EO of EO 226). ; NCDOT 1998 bridge replacement project	NCBURK	2005-05
226.222	CD	Lake James, SW of Bridge downstream from Powerhouse (Sub of 226)	NCBURK	2006-10-25
226.223	X	Lake James, Paddy Creek, unnamded tributary NE of dam (Sub of 226)	NCBURK	2006-10-25
226.224	BC	Lake James, Paddy Creek, SE of the dam (Sub of 226)	NCBURK	2006-10-25
226.225	A	Lake James, Linville Dam (sub EO of EO 226)	NCBURK	2005-10-04
–				

252.000	B	South Fork Catawba River, Henry Fork, unnamed tributaries and US 321 (parent of 019 and 020).	NCCATA	2007
252.019	D?	NCDOT TIP: R-0085 US 321 Bypass site id # 1, 2, and 3 ; NCDOT TIP: R-2824 ; South Fork Catawba River: Henry Fork, Highway 70 Sites 1-3 (Sub of 252)	NCCATA	2007
252.020	B	NCDOT TIP: R-0085 US 321 Bypass site id # 4 ; NCDOT TIP: R-2824 ; South Fork Catawba River: Henry Fork, Large unnamed tributary and US 321 (Sub of 252)	NCCATA	2007
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261.000	B	Leepers Creek Heartleaf Site	NCLINC	2006-06-15
261.258	B	Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 05 (Sub EO of EO 261)	NCLINC	2006-06-15
261.259	B	Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 23 (Sub EO of EO 261)	NCLINC	2005-10
261.263	E	Leepers Creek Heartleaf Site	NCLINC	2001-04-04
–				

295.000	B	Hickory Area: Parent EO	NCBURK NCCALD NCCATA	2016-03-20
295.021	A	Hickory Area, Catawba River: Geitner Park, behind Boy Scout Building [Proposed Bike Path] (Sub EO of EO 295)	NCBURK	2005-05-11
295.294	C	Hickory Area: Bud Geitner Park Transplant Site (Sub EO of EO 295)	NCBURK	2016-03-20
295.313	E	NCDOT TIP U-4700 US 321 corridor	NCCATA	2012
295.314	E	NCDOT TIP U-4700	NCCALD	2012
–				
130.000	B?	Kross Keys Natural Area	NCPOLK	2005-05-18
304.000	B?	Simms Hill/Little River Uplands	NCBURK	2015-05-05
71.000	BC	Knob Creek Natural Area	NCCLEV	2005-05-05
92.000	BC	Second Broad River: Webbs Creek, headwaters	NCRUTH	2003-04-20
272.000	BC	No Business Creek, Boyd Tract	NCCLEV	2007-04-20
57.000	C	Second Broad River: Morrow Ceek, tributary NW of RR ROW, about 0.4 miles NE of Alt 221	NCRUTH	2001-05-18
59.000	C	Third Creek Rare Plant Site	NCALEX	2010-03-21

97.000	C	Sandy Run/Cliffside Natural Area	NCCLEV	2002-04-25
97.017	D	Broad River: Sandy Run Creek, N of SR 1003 (Sub EO of EO 097).	NCCLEV	1995-1996
97.018	D	Broad River: Sandy Run Creek, SW of SR 1164 (Sub EO of EO 097)	NCCLEV	2001-04-03

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
97.069	U	Sandy Run/Lovelace Natural Area	NCCLEV	2002-04-25
97.230	D	Sandy Run/Cliffside Natural Area	NCCLEV	2002-04-25
–				
151.000	C	Broad River: Richardson Creek, headwaters S of Shiloh Road and E of Danieltown	NCRUTH	2002-07-04
154.000	C	Facebook Site ; Second Broad River: 0.5 miles south of Morrow Creek ; USFWS Flex Fund Monitoring Site 5	NCRUTH	2016-05-18
207.000	C	Buffalo Creek: Tributary south of I-74 & east of Creek, BYP site 48 ; NCDOT TIP: R-2707	NCCLEV	2000

248.000	C	Jonas Road Rare Plant Site	NCRUTH	2005-04-12
248.040	C	Jonas Road Rare Plant Site	NCRUTH	2005-04-12
248.054	D	Broad River: McKinney Creek, Jebb Lamb Road Bridge (SR 1108) (Sub EO of EO 248).	NCRUTH	2014-05
–				
275.000	C	Buffalo Shoals Creek ; NCDOT TIP: B-2146 SR 1333 Eufola Road over Buffalo Shoals Creek	NCIRED	2014-05-21
291.000	C	Gunpowder Creek ; NCDOT TIP #R-3437	NCCALD	2010-04-21
298.000	C	Brushy Creek Headwaters	NCCLEV	2014-04-15

307.000	C	First Broad River: Beaverdam Creek tributaries Parent EO	NCCLEV	2006-04-06
307.036	CD	First Broad River: Beaver Dam Creek, unnamed tributary S of the Seaboard RR and E of SR 1315	NCCLEV	1997-06-04
307.187	C	First Broad River: Beaverdam Creek: Ravine just east of SR 1319, BYP sites 37 and 38 ; NCDOT TIP: R-2707	NCCLEV	2001-04-11
307.188	E	First Broad River: Beaverdam Creek, Tributary N of SR 1316 and W of SR 1315 (Plato Lee Road), BYP sites 1,2,&3 ; NCDOT TIP: R-2707	NCCLEV	2000-10-26
307.189	D	First Broad River: Beaverdam Creek, ravine to unnamed tributary S of SR 1314 & W of SR 1313, BYP site 39 ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2006-04-06
–				
308.000	C	Glade Creek, Alexander County	NCALEX	2015-03

316.000	C	Northern Catawba County: Parent EO	NCCATA	2017-05-02
316.273	C	Northern Catawba County - Catawba River: Unnanmed tributary to Falling Creek (Sub EO of EO 316)	NCCATA	2006-09
316.315	D	NC-127/Cloninger Mill Road (Sub EO of EO 316) ; NCDOT TIP No. R-3603A	NCCATA	2017-05-02
–				
318.000	C	Burke County - Drowning Creek UT ; NCDOT TIP No. B-4447	NCBURK	2017-04
31.000	C?	NCDOT TIP: R-2824 ; NCDOT TIP: U-2307C I-40/Startown Road Interchange ; South Fork Catawba River: Clark Creek, tributary near Fairbrook	NCCATA	2010-12-21
229.000	C?	Hogpen Branch transplant area ; Second Broad River: Hogpen Branch	NCRUTH	2005-10-03
271.000	C?	Pott Creek	NCCATA	2012-03-16
33.000	CD	Catawba River: Tributary to Rhodhiss Lake, John's River Waste Management Facility.	NCBURK	1996-05-03
77.000	CD	Little Gunpowder Creek Rare Plant Site 2	NCCALD	2013-05-15

98.000	CD	Cat Square Heartleaf Forest	NCLINC	2012-03-16

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
98.002	X	South Fork Catawba River: Indian Creek, Reeps Grove Church (Sub EO of EO 098).	NCLINC	1957-04-28
98.003	D	Cat Square Heartleaf Forest	NCLINC	2001-04-02
98.004	CD	Cat Square Heartleaf Forest	NCLINC	2001-04-02
98.060	D	NC DOT TIP: B-2119 ; South Fork Catawba River: Hulls Crossroads (Sub EO of EO 098)	NCLINC	2012-03-16
–				

179.000	CD	South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (parent of 030 and 162)	NCCATA	2012-12-17
179.030	CD	NCDOT TIP: R-2824 ; NCDOT TIP: U-2414A Tate Blvd SE ; South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (Sub of 179).	NCCATA	2013-06-05
179.162	D	NCDOT TIP: R-2824 ; NCDOT non-TIP Division 12 Project at SR 1473 near Miller Branch ; South Fork Catawba River: Clark Creek, Miller Branch, tributary E of Catawba Memorial Hospital (Sub of 179)	NCCATA	2012-12-17
–				
183.000	CD	Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground	NCCATA	2005-06-07
296.000	CD	Unnamed tributary of King's Mountain Reservoir; east of South Crowders Creek Forests.	NCGAST	2012-03-16
297.000	CD	Beaverdam Creek at First Broad River	NCCLEV	2011
1.000	D	Brushy Creek Bluff	NCCLEV	2001-04-04
8.000	D	First Broad River: Knob Creek, Unnamed Tributary South of Zion Hill Church [Poundingmill Creek] ; Poundingmill Creek (per Gaddy, 1981)	NCCLEV	2002
32.000	D	NCDOT TIP: R-2824 ; NCDOT TIP: U-2528AA I-40/SR 1124 Interchange ; South Fork Catawba River: Henry Fork tributary south of Longview	NCCATA	2013-06-06
48.000	D	Catawba River: Lippard Creek tributary	NCLINC	1999-05-17
58.000	D	South Fork Catawba River: Camp Creek, south SR 1120	NCCATA	2002-04-18
70.000	D	Hicks Hill Bluffs and Forests	NCCLEV	2002-06-28
85.000	D	Buffalo Creek: northeast of SR 1903 ; NCDOT TIP: R-2824	NCCLEV	2005-Spring
87.000	D	Catawba River: Lower Creek: Miller Creek, headwaters near Martin Marietta Materials	NCCALD	2011-11-04

93.000	D	West Shelby Mesic Slope	NCCLEV	2005-05-19
93.034	D	West Shelby Mesic Slope	NCCLEV	2005-05-19
93.035	D	First Broad River: Brushy Creek, unnamed tributary south of SR 1123 (Sub EO of EO 093)	NCCLEV	2001-04-04
–				

101.000	D	Camp Creek Bluff	NCBURK	2002-04-18
101.005	D	Camp Creek Bluff	NCBURK	2002-04-18
101.006	X	Camp Creek North (per Gaddy, 1981) ; South Fork Catawba River: Jacob Fork, Camp Creek North	NCBURK	1981-05
101.180	D	Camp Creek Bluff	NCBURK	1995
–				
158.000	D	NCDOT non-TIP Division 12 road construction project at SR 1115 ; South Fork Catawba River: Jacob Fork, Camp Creek, tributary at SR 1115 ; USFWS Flex Fund Monitoring Site 6	NCCATA	2016-05-24

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
195.000	D	First Broad River: Hickory Creek, unnamed tributary SE of HWY 18 ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2006-04-06
206.000	D	Buffalo Creek: Ravine N of Creek and SW of I-74, BYP Sites 44, 45, 46, and 47 ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2007-04-10
219.000	D	Smith Cliff/Henry Fork River	NCBURK	2005-05-06
277.000	D	Hickory: Martin Marietta Quarry	NCCATA	2011-11-04
292.000	D	Forest City: Adjacent to Isothermal Community College	NCRUTH	2010
299.000	D	Lincoln County, SR-1314 (Will Schronce Road) ; NCDOT	NCLINC	2014-04-01
300.000	D	Levan family farm	NCIRED	2013-04
306.000	D	Fanjoy Road Site, Statesville	NCIRED	2015
317.000	D	NCDOT TIP No. R-3603A ; Southern Alexander County - Catawba River: NC-127/Chigger Ridge Road	NCALEX	2017-05-02
124.000	D?	Sandy Springs Church Springhead Swamp	NCPOLK	2005-05-18
279.000	D?	Northeast Lincolnton: Unnamed tributary of Walker Branch	NCLINC	2009-04-20
309.000	D?	South Mountains Pleasant Grove Uplands	NCBURK	2016-05-06
15.000	E	Mount Zion Heartleaf Forest	NCLINC	2000-03-31
210.000	E	Catawba River: Drowning Creek, unnamed tributary at SR 1628 ; NCDOT TIP: R-2707	NCBURK	2001-10
264.000	E	Carpenter Creek Heartleaf Site	NCLINC	2001-04-27
265.000	E	June Bug Woods	NCLINC	2000-05-30
266.000	E	Indian Creek Slopes	NCLINC	2001-05-31
293.000	E	Killian Crossroads	NCCATA	2010?
278.000	H	West Fork Brushy Creek	NCCLEV	1980
25.000	U	Hildebran/Henry River Slopes	NCBURK	1985-03
27.000	U	South Fork Catawba River: Henry Fork, Prospect Ridge	NCBURK	1991-Spring
64.000	U	Beaverdam Creek Natural Area	NCCLEV	2002-06-11
89.000	U	South Fork Catawba River: Jacob Fork, Whitener Creek south of Valdese	NCBURK	2003-03-21

117.000	U	First Broad River: Knob Creek, Leeman Gap (parent EO, includes sub EOs 083 & 084)	NCBURK NCCLEV	2003-03-21
117.083	U	First Broad River: Knob Creek: Leeman Gap (south) (Sub EO of EO 117)	NCCLEV	2003-03-21
117.084	U	First Broad River: Knob Creek, Leeman Gap (north) (Sub EO of EO 117)	NCBURK NCCLEV	2003-03-21
–				
11.000	X	South Fork Catawba River: Henry Fork, Pleasant Grove	NCBURK	1981-05

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

EO ID: 108
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Fingerville East, Fingerville West
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-10
Rank Comments: Ranked by J. Holling, data manager. Good size population. but unsure of ownership, management, or protection.
Population Data: Seventy four plants.
Habitat: In west flowing stream flat.
Directions: New Alverson Grove Church. Plotted near Alverson Grove Church.
Land Owner: -
Specimen:

EO ID: 1160
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: [redacted]
Longitude: [redacted]
County: Greenville
Topo Map: Paris Mountain
Watershed: 03050108 - Enoree
First Observed: 1981-06-01
Last Observed: 1991
Not Found:
Observer: D.A. Rayner; G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure if being damaged by cattle.
Population Data: 1991: Between 75 and 100 plants.
Habitat: On small hummocks in red-maple/swamp tupelo seepage swamp near branch-head origin.
Directions: Site is about 800 feet due south of junction of SSR 173 and SSR 262. Additional population is 2125 feet due northwest of road junction.
Land Owner: -
Specimen: D.A. Rayner (1258). 1981. USCH 21516.

EO ID: 13002
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: [redacted]
Longitude [redacted]
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 2005-07-12
Last Observed: 2005-07-12
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2011-08-08
Rank Comments: Ranked by J. Holling, data manager. Likely to persist if property owner has not changed management of property, but unsure if that has happened.
Population Data: 250-500 plants. Many large clumps with over 10 leaves per plant.
Habitat: Abundant along north side of the east-west flowing branch, and very close to water flow on south side of same branch. The north-south branch has very steep banks and deep shade. The plants are clumped in the more shaded slopes where Kalmia is thick.
Directions: On Kalmia clad bans of upper tributary of Beaver Dam Creek, a tributary of South Pacolet River.
Land Owner: S. Metcalf-Landrum Mill Road
Specimen:

EO ID: 13003
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Boiling Springs South
Watershed: 03050105 - Upper Broad
First Observed: 2004-04-22
Last Observed: 2004-04-22
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2011-08-08
Rank Comments: Ranked by J. Holling, data manager. Likely to persist if property owner has not changed management of property, but unsure if that has happened.
Population Data: 1500 plants of all size classes.
Habitat: Abundant on the east bank of this south flowing stream. Many plants in the drainage between the open fields.
Directions: Cherokee Creek, a tributary of Broad River. Southwest of the junction of Bonner and Robbin School roads. This population is 4 miles east of the populations on the eastern edge of Cowpens Battlefield.
Land Owner: A. B. Jolley-
Specimen:

EO ID: 1322
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with FS
Not processed per agreement with FS
Not processed per agreement with FS
Longitude: Not processed per
Not processed per
Not processed per
County: Cherokee
Topo Map: Chesnee
Watershed: 03050105 - Upper Broad
First Observed: 1986-04-11
Last Observed: 1986-04-11
Not Found:
Observer: T. Titus
Viability Rank: H? - Possibly historical
Rank Date: 2012-04-26
Rank Comments: Ranked by J. Holling, data manager, based on last observation date.
Population Data:
Habitat: With Kalmia, on bank several feet above stream, just above waterfall.
Directions: Horse Creek. Site is about 0.5 mile south of S-74 bridge over Horse Creek.
Land Owner: -
Specimen: T. Titus (annot. by D.A. Rayner, 1188). 1986. USCS.

EO ID: 1449
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Plat
Not processed per agreement with Plat
Not processed per agreement with Plat
Longitude: Not processed per agreement with Plat
Not processed per agreement with Plat
Not processed per agreement with Plat
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1998-10-15
Last Observed: 2001-07-25
Not Found:
Observer: G. Williamson; G. Newberry; L. Duncan
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-15
Rank Comments: Ranked by J. Holling, data manager. Unsure if easement ever procured or if population is being protected.
Population Data: 1998(Williamson, Newberry, Duncan): Population consists of approximately 1000 plants, most of which occue on a proposed 50 ft. sanitary sewer easement. 1999: Three hundred fifty eight plants were transplanted into EO 49 and a 1.3 acre preserve set up near there. 2001-04-30(Newberry): Around 500 plants still persist here. A particularly nice clump is located in the ravine north of Dill Cir. 2001-07-25(Newberry): Following sanitary sewer construction, about 200-250 plants remain in one area, with another 200-300 plants in a second area.
Habitat: 1999: On well-drained, Pacolet soils, along the lower to mid-slopes of moderately forested hardwood uplands. 2001-07-25: In woods adjacent to sewer line right-of-way paralleling west bank of Page Creek and Dill Circle and at base of north facing slope just north of Dill Circle and west of right-of-way.
Directions: Located adjacent to Page Creek, approximately 680 feet west of its intersection with Red Hill Road (SR 930). 2001-04-30: In the ravine north of Dill Circle. 2001-07-25: The land just north of Dill Circle and west of right0of0way has recently been purchased by R. Dawson and J. Storin, and an easement is being sought.
Land Owner: R. Dawson & J. Storin-, -
Specimen:

EO ID: 1450
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1998-10-15
Last Observed: 2001-07-25
Not Found:
Observer: G. Williamson; G. Newberry; L. Duncan
Viability Rank: AB - Excellent or good estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Fairly large population on preservation.
Population Data: 1998(Williamson, Newberry, Duncan): Approximately 1600 plants, most of which are located within a proposed 50 ft sanitary sewer easement. Population is to be relocated to a protected, suitable habitat in the vicinity of current location. 1999-12: Three hundred and fifty eight plants from EO 50 on Pages Creek were transplanted into this population and a 1.3 acre preserve set up here. 2001-04-30(Newberry): Currently, there are well over 500 platns in the new Spartanburg Water Systems preserve here. 2001-07-27(Newberry): With recruitment and plants already present in the preserve, there are between 750-850 plants at this location.
Habitat: It is on well drained, Pacolet soils, along the lower to mid-slopes of moderately forested hardwoods.
Directions: Population is adjacent to an un-named perennial tributary of Page Creek, approximately 350 ft. east of its intersection with Campbell Ave. (SR-1258).
Land Owner: -
Specimen:

EO ID: 1460
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Fairly small population, and unsure of ownership, management, or protection.
Population Data: Between 50 and 100 plants.
Habitat: In seeps and on slope along stream.
Directions: Site is just northeast of junction of SC 14 and High Farm Road, northeast of Landrum.
Land Owner: -
Specimen:

EO ID: 1649
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Campobello
Watershed: 03050107 - Tyger
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: K. Rollins; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Unsure of management or protection.
Population Data: Clump (one of two in area with a total of 50-100 plants).
Habitat: In seepage at springs along tributary.
Directions: Unnamed tributary of Tyger River, south of S-75, about 1.5 miles southwest of Faith Missionary Church.
Land Owner: Judd Sloan-
Specimen:

EO ID: 1713
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Paris Mountain
Watershed: 03050108 - Enoree
First Observed: 1988
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: AC - Excellent, good, or fair estimated viability
Rank Date: 2010-02-17
Rank Comments: Ranked by J. Holling, data manager. Likely to persist on Heritage Preserve.
Population Data: A single plant with more than 50 leaves.
Habitat: In seepage area.
Directions: Along northeastern-most tributary of Enoree River.
Land Owner: Dept. of Natural Resources-Bunched Arrowhead Heritage Preserve
Specimen:

EO ID: 1730
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per
Not processed per
Not processed per
Longitude: Not processed per agreement with Plat
Not processed per agreement with Plat
Not processed per agreement with Plat
County: Spartanburg
Topo Map: Valley Falls
Watershed: 03050105 - Upper Broad
First Observed: 1984
Last Observed: 1984
Not Found:
Observer: D.A. Rayner
Viability Rank: H? - Possibly historical
Rank Date: 2009-07-02
Rank Comments: Ranked by J. Holling, data manager, based on last observation date.
Population Data:
Habitat: In openings in dense layer of mountain laurel, on steep north facing slopes adjacent to reservoir. Dominant canopy trees include white oak, loblolly pine, scarlet oak, and mockernut hickory. Pacolet sandy loam soils.
Directions: Blalock Reservoir Site P. Site is on south shore of reservoir, 0.9 mile west of the S-43 bridge (Paris Bridge). Take S-43 north out of Mountain View 0.2 miles. Make a left on a local road and follow it until it ends. The site is 0.3 miles past the end of the road on the Pacolet River.
Land Owner: -
Specimen:

EO ID: 1984
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: [redacted]
Longitude: [redacted]
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050107 - Tyger
First Observed: 1990
Last Observed: 1991
Not Found:
Observer: A. Claggett; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Large population, but unsure of management or protection.
Population Data: Seven hundred plants.
Habitat: Along edge of tributary. - as of 11 July 2006, the portion of the population at the Claggett site in Raintree subdivision off Briar Creek Drive, was choked out by encroachment of English Ivy.
Directions: Along a tributary of Beaverdam Creek, southwest of Spartanburg, near the tennis courts of Raintree subdivision.
Land Owner: Raintree Neighborhood Association-
Specimen:

EO ID: 1993
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Good size population, but unsure of ownership, management or protection.
Population Data: Three hundred three plants.
Habitat: On stream edge and on north facing slopes.
Directions: Clear Branch Creek. Site is 1800 feet northeast of junction of S-208 and S-183, south of Landrum.
Land Owner: -
Specimen:

EO ID: 235
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Chesnee, Cowpens, Boiling Springs South, Gaffney
Watershed: 03050105 - Upper Broad
First Observed: 1956-04-22
Last Observed: 1991
Not Found:
Observer: H.E. Ahles; S.W. Leonard; A.E. Radford; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure of management or protection.
Population Data: 1956: Type specimen collected. 1991: Two hundred plants.
Habitat: 1969: Found in deciduous, north slope woods. Near creek on both sides of the road. 1991: Surveying in area north of highway is impacting about one-third of the population.
Directions: Cherokee Creek. On SC 11, 8.7 miles northwest of Gaffney.
Land Owner: -
Specimen: H.E. Ahles (11287). 1956. DUKE.; S.W. Leonard (2325) and A.E. Radford. 1969. NCU.

EO ID: 2369
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agre
Not processed per agre
Not processed per agre
Longitude: Not processed per agreement with Plai
Not processed per agreement with Plai
Not processed per agreement with Plai
County: Spartanburg
Topo Map: Valley Falls
Watershed: 03050105 - Upper Broad
First Observed: 1998-07-31
Last Observed: 1998-07-31
Not Found:
Observer: D.A. Rayner
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Small population, and unsure of management or protection.
Population Data: 25 plants.
Habitat: Growing along 400 feet of a north facing bluff along creek.
Directions: Shoally Creek. Located just south of I-85 bypass and west of Parris Bridge Road junction with Shoally Creek.
Land Owner: -
Specimen:

EO ID: 2486
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Wellford
Watershed: 03050107 - Tyger
First Observed: 2001-04-13
Last Observed: 2001-04-13
Not Found:
Observer: G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-16
Rank Comments: Ranked by J. Holling, data manager. Small, unprotected population.
Population Data: Fifty bunches. Most plants contain fairly large clumps of leaves. Flowering is extensive, but few small plants were observed.
Habitat: Plants restricted to edges of small stream. Much slumping of bank of stream has occurred. Shrub layer dominated by *Rhododendron nudiflorum* with invading *Lonicera japonica*. Most plants on north side of stream, which is fairly wooded - oak, sweetgum and tulip poplar with hickory saplings. No mountain laurel, but a low shrub layer, dominated by *Xanthorhiza*, dominates creek edge.
Directions: In southwest flowing tributary of North Tyger River, in back of 144 West Wood Glen Drive in Wood Ridge subdivision south of US 29 and west of I-26.
Land Owner: Lauri Chauhan-
Specimen:

EO ID: 2719
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Plat
Longitude: Not processed per agreement with Plat
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1997-07-15
Last Observed: 2001-04-30
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-16
Rank Comments: Ranked by J. Holling, data manager. On City of Landrum property, but unsure of management or protection.
Population Data: Population of 400 plants.
Habitat: The area is heavily impacted by kudzu and Japanese honeysuckle. The headwaters are in a wooded area that remains viable.
Directions: At headwaters of tributary of Wolfe Creek. West of N. Valley Road and north of Red Bird Lane in City of Landrum.
Land Owner: City of Landrum-
Specimen:

EO ID: 2769
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with P
Not processed per agreement with P
Not processed per agreement with P
Longitude: Not processed per agr
Not processed per agr
Not processed per agr
County: Spartanburg
Topo Map: Pacolet
Watershed: 03050105 - Upper Broad
First Observed: 1998-04-23
Last Observed: 1998-04-23
Not Found:
Observer: J.A. Sorrow; K. Prosser; S. Greeter
Viability Rank: U - Unrankable
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Not enough information.
Population Data:
Habitat:
Directions: From the intersection of Kelly Road and Cannon Campground Road, travel southeast on Kelly Road for approximately 0.62 mile. Site is approximately 0.3 mile south of road.
Land Owner: -
Specimen:

EO ID: 2791
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Pacolet
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: AB - Excellent or good estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Large population on Heritage Preserve likely to persist.
Population Data: Part of very large population (5000 plants total).
Habitat: On *Kalmia* bluffs overlooking Peter's Creek and Mineral Springs Creek, in piedmont cove forest.
Directions: Peter's Creek Heritage Preserve. Site is northeast of Spartanburg, east of Saranac Lake Subdivision.
Land Owner: SC Dept. of Natural Resources-Peter's Creek Heritage Preserve
Specimen:

EO ID: 3101
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1970-04-01
Last Observed: 1991
Not Found:
Observer: Pierce; Wyckoff; G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure if cattle damage continued.
Population Data: 1991: Seventy five plants in two populations.
Habitat: In mesic hardwood forest in ravine. 1991: Cattle are impacting population.
Directions: Fairview Farms. Just south of confluence of Page Creek and North Pacolet River, 0.5 mile southeast of SC 14 bridge over river.
Land Owner: -
Specimen: Pierce and Wyckoff. 1970. CON.

EO ID: 3124
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Gaffney
Watershed: 03050105 - Upper Broad
First Observed: 1984-04-06
Last Observed: 1984-04-06
Not Found:
Observer: S.R. Hill
Viability Rank: H? - Possibly historical
Rank Date: 2009-07-02
Rank Comments: Ranked by J. Holling, data manager, based on last observation date.
Population Data:
Habitat: Local in wet soil with *Osmunda* and *Xanthorrhiza* in shaded small valley.
Directions: Southwest side of SC 11, 5.45 miles northwest of I-85 crossing, northwest of Gaffney.
Land Owner: -
Specimen: S.R. Hill (20406). 1989. CLEMS 35979.

EO ID: 3367
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Plan
Longitude: Not processed per agreement with Plan
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Largel population, but unsure of ownership, management, or protection.
Population Data: More than 1000 plants.
Habitat: Along creek.
Directions: Unnamed branch of Spivey Creek. Site is 3800 feet northwest of junction of US 176 and S-209 in Ingleside.
Land Owner: -
Specimen:

EO ID: 3551
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050105 - Upper Broad
First Observed: 1989
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BC - Good or fair estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On USC-U, but unsure of management or protection.
Population Data: Small population (25-50 plants).
Habitat: Along stream edge and in floodplain.
Directions: University of South Carolina - Upstate. Site is near where stream flows across nature trail at Child Development Center.
Land Owner: University of South Carolina Upstate-
Specimen:

EO ID: 3552
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050107 - Tyger
First Observed: 1990
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Unsure of management or protection.
Population Data: Relatively small population (150 plants) but with large plants.
Habitat: Along stream edge and on slope above tributary, on a protected hillside.
Directions: Camp Mary Elisabeth. Tributary of Holston Creek, just east of Camelot Drive in Spartanburg.
Land Owner: Girl Scouts of America-Camp Mary Elisabeth
Specimen:

EO ID: 3852
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Paris Mountain
Watershed: 03050108 - Enoree
First Observed: 1964-05-01
Last Observed: 1964-05-01
Not Found:
Observer: E.A. Vernon
Viability Rank: H - Historical
Rank Date: 2009-07-02
Rank Comments: Ranked by J. Holling, data manager, based on last observation date.
Population Data:
Habitat: In swampy area.
Directions: 3 miles east of Travelers Rest, along Beaverdam Creek.
Land Owner: -
Specimen: E.A. Vernon. 1964. USCH 7361.

EO ID: 4312
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050105 - Upper Broad
First Observed: 1997-02
Last Observed: 1997-02
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2012-05-07
Rank Comments: Ranked by J. Holling, data manager. Likely to persist if property owner has not changed management of property, but unsure if that has happened.
Population Data: 450 to 600 plants.
Habitat:
Directions: Site located due north of Lincoln Memorial Cemetary on Cannonc Campground Rd. Property is on the eastern edge of Spartanburg on 350 acres with about 117 acres cleared. In northeast flowing tributary to Peters Creek.
Land Owner: John & David Dunbar-
Specimen: G. Newberry. 1997. USCS.

EO ID: 4476
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Pacolet
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On private property, so unsure of management or protection.
Population Data: Part of a very large population (5000 plants total).
Habitat: On Kalmia bluffs overlooking Peter's Creek and Mineral Springs Creek, in piedmont cove forest.
Directions: Peter's Creek Dwarf-flowered Heartleaf Site. Site is northeast of Spartanburg, east of Saranac Lake Subdivision.
Land Owner: -
Specimen:

EO ID: 4875
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Tigerville
Watershed: 03050107 - Tyger
First Observed: 1981-06-02
Last Observed: 1991
Not Found:
Observer: D.A. Rayner; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure of management or protection.
Population Data: 1991: One hundred fifty plants.
Habitat: On hummocks on northeast facing bluff, next to swamp tupelo/red maple seepage swamp at branch head of tributary to Beaverdam Creek.
Directions: Site is just east of S-903, 1400 feet north of junction with SC-290.
Land Owner: -
Specimen:

EO ID: 4879
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Campobello
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Unsure of management or protection.
Population Data: One hundred sixty-eight plants.
Habitat: On north and northwest facing slopes along intermittent stream.
Directions: Site is 2100 feet northwest of junction of SC 11 and SC 14.
Land Owner: -
Specimen:

EO ID: 5173
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Chesnee, Cowpens
Watershed: 03050105 - Upper Broad
First Observed: 1988
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BC - Good or fair estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On National Battlefield, but unsure of management or protection.
Population Data: More than 130 plants (largest of three colonies in this area).
Habitat: At stream edge and on slopes between stream and picnic area.
Directions: Cowpens National Battlefield. Along tributary of Island Creek that feeds Scruggs Lake (now drained).
Land Owner: US National Park Service-Cowpens National Battlefield
Specimen:

EO ID: 5183
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Fe
Longitude: Not processed per agreement with Fe
County: Spartanburg
Topo Map: Pacolet
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On private property, so unsure of management or protection.
Population Data: Part of a very large population (5000 plants total).
Habitat: On Kalmia bluffs overlooking Peter's Creek and Mineral Springs Creek, in piedmont cove forest.
Directions: Peter's Creek Dwarf-flowered Heartleaf Site. Site is northeast of Spartanburg, east of Saranac Lake Subdivision.
Land Owner: -
Specimen:

EO ID: 5554
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Boiling Springs South, Chesnee
Watershed: 03050105 - Upper Broad
First Observed: 1989-04-06
Last Observed: 1989-04-06
Not Found:
Observer: S.R. Hill
Viability Rank: U - Unrankable
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Not enough information.
Population Data:
Habitat:
Directions: East of Lenzer Circle. 4.3 miles southwest of the Cherokee/Cleveland County line. East of US 29, west of Blacksburg.
Land Owner: -
Specimen: S.R. Hill (20405). 1989. CLEMS 35980.

EO ID: 5677
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per
Not processed per
Not processed per
Longitude: Not processed per agreement with Plan
Not processed per agreement with Plan
Not processed per agreement with Plan
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On High School campus and unsure of management or protection.
Population Data: One hundred fifty five plants.
Habitat: Along creek.
Directions: Page Creek. At Landrum High School.
Land Owner: -
Specimen:

EO ID: 6009
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Inman
Watershed: 03050105 - Upper Broad
First Observed: 1994-06-01
Last Observed: 1994-06-01
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Partially threatened by inundation. Unsure of any management or protection.
Population Data: Over 100 plants in 4 colonies. Two of the smaller colonies, comprising about 10 plants, are threatened with inundation by the proposed Lake Emory.
Habitat: Near seepages at base of gentle slopes along creek. Over Pacolet sandy loam soils.
Directions: Greene Creek.
Land Owner: -
Specimen:

EO ID: 6010
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Valley Falls
Watershed: 03050105 - Upper Broad
First Observed: 1984-10-23
Last Observed: 1984-10-23
Not Found:
Observer: D.A. Rayner
Viability Rank: H? - Possibly historical
Rank Date: 2009-07-02
Rank Comments: Ranked by J. Holling, data manager, based on last observation date.
Population Data:
Habitat:
Directions: Blalock Reservoir Site C. From Mountain View, go 1.8 miles east on S-190. Turn left onto S-189 and go 1.3 miles north. Site is between road and Little Buck Creek.
Land Owner: -
Specimen:

EO ID: 6097
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Pacolet
Watershed: 03050105 - Upper Broad
First Observed: 1967
Last Observed: 1991
Not Found:
Observer: McMillan; Voyles; L.L. Gaddy; G. Newberry
Viability Rank: AB - Excellent or good estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Population on Heritage Preserve likely to persist.
Population Data: Twenty five hundred plants (part of very large population - 5000 plants total).
Habitat: On north facing slope of east side of Saranac Lake Dam.
Directions: Peter's Creek Heritage Preserve. Follow US 29 east from Spartanburg. Turn left on first unnumbered paved road on left after passing S-138. Proceed about 0.5 mile to sign on right, 'Saranac Lake'. Turn right and follow paved road 0.8 mile to 'Hullwood' (private).
Land Owner: SC Dept. of Natural Resources-Peter's Creek Heritage Preserve
Specimen: McMillan. CONV 3837.; Voyles. CONV 2056.

EO ID: 6179
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with FS
Not processed per agreement with FS
Not processed per agreement with FS
Longitude: Not processed per agreem
Not processed per agreem
Not processed per agreem
County: Spartanburg
Topo Map: Campobello
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: K. Rollins; G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Population threatened by development, and unsure of management or protection.
Population Data: Between 50 and 100 plants, with *Kalmia*.
Habitat: At base of west facing slope along tributary. Site is threatened by residential development.
Directions: Along tributary of Motlow Creek, just north of a man-made lake, 3 miles southwest of Campobello; north of Motlow Creek Road and northwest of S-347.
Land Owner: John Rollins-
Specimen:

EO ID: 6287
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Taylors
Watershed: 03050107 - Tyger , 03050108 - Enoree
First Observed: 1999-06-28
Last Observed: 1999-06-28
Not Found:
Observer: G. Newberry
Viability Rank: BC - Good or fair estimated viability
Rank Date: 2008-12-15
Rank Comments: Ranked by J. Holling, data manager. Single clump on a Heritage Preserve is protected, but size may not be viable.
Population Data: Single small clump.
Habitat: Near creek draining seepage forest.
Directions: Double Springs. From the junction of SC 290 and SSR 139, take SC 290 2 miles southeast toward Greer. Site is northeast of SC 290 and Darby Road.
Land Owner: Dept. of Natural Resources-Clear Creek Heritage Preserve
Specimen:

EO ID: 6456
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050105 - Upper Broad , 03050107 - Tyger
First Observed: 1990
Last Observed: 1991
Not Found:
Observer: R. Powell; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Unsure of management or protection.
Population Data: Fifty plants. Some plants overgrown with poison ivy.
Habitat: Along tributary flowing east into Cleveland Park Lake. Site is in an old garden area.
Directions: Site is on Glenwood Drive in Spartanburg.
Land Owner: City of Spartanburg-Cleveland Park
Specimen:

EO ID: 6523
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Fe
Not processed per agreement with Fe
Not processed per agreement with Fe
Longitude: Not processed per agreem
Not processed per agreem
Not processed per agreem
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050105 - Upper Broad
First Observed: 2001-08-01
Last Observed: 2001-08-01
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-16
Rank Comments: Ranked by J. Holling, data manager. Good size population on private land. Unsure of protection or management.
Population Data: Population consists of 200 - 250 mature plants.
Habitat: In deep shade of the midslope of north-facing slope overlooking creek. Associated species include *Kalmia* and *Fagus* mesic woods.
Directions: South of bridge over Lawson's Fork Creek on US 221 and east of Barnwell Road.
Land Owner: Henderson Family-
Specimen:

EO ID: 6749
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: [redacted]
Longitude: [redacted]
County: Spartanburg
Topo Map: Fingerville West
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Fairly small population, and unsure of ownership, management, or protection.
Population Data: Fifty six plants.
Habitat: On northeast facing bluffs.
Directions: Bear Creek. Site is 1.35 miles northwest of Fairview Church in Little Africa.
Land Owner: -
Specimen:

EO ID: 6825
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Chesnee
Watershed: 03050105 - Upper Broad
First Observed: 1988
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BC - Good or fair estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On National Battlefield, but unsure of mangement or protection.
Population Data: Fifty plants (one of three colonies in this area).
Habitat: At stream edge and on slopes above.
Directions: Cowpens National Battlefield. Along tributary of Island Creek that feeds Scruggs Lake (now drained).
Land Owner: US National Park Service-Cowpens National Battlefield
Specimen:

EO ID: 6953
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050105 - Upper Broad
First Observed: 1998-04-23
Last Observed: 1998-04-23
Not Found:
Observer: J.A. Sorrow; K. Prosser; S. Greeter
Viability Rank: U - Unrankable
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Not enough information.
Population Data:
Habitat: On south side of Peter's Creek.
Directions: From the intersection of Cannon Campground Road and Kelly Road, travel south on Cannon Campground Road for approximately 0.54 mile. Site is on the right side of the road.
Land Owner: -
Specimen:

EO ID: 7013
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Valley Falls
Watershed: 03050105 - Upper Broad
First Observed: 1981-05-01
Last Observed: 1991
Not Found:
Observer: H. Hillstad; R. Clark; L.L. Gaddy; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure of management or protection on portion of population not inundated by lake.
Population Data: Sixteen colonies. 2577 plants were destroyed by the creation of the reservoir. About 1500 plants located above it remain.
Habitat: Plants are on steep north facing slopes with mountain laurel.
Directions: Taylor Blalock Reservoir. Along south margins of reservoir, above S-189 bridge.
Land Owner: -
Specimen:

EO ID: 7286
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: [redacted]
Longitude: [redacted]
County: Cherokee
Topo Map: Grover, Blacksburg South, Kings Creek, Blacksburg North
Watershed: 03050105 - Upper Broad
First Observed: 1989
Last Observed: 1991
Not Found:
Observer: S.R. Hill; G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Small population, and unsure of management, or protection.
Population Data: 1989 & 1991: Twenty plants.
Habitat: On slope in back of property.
Directions: 184 McKee Drive.
Land Owner: T. Kiser-
Specimen:

EO ID: 730
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with FS
Not processed per agreement with FS
Not processed per agreement with FS
Longitude: Not processed per agreem
Not processed per agreem
Not processed per agreem
County: Greenville
Topo Map: Slater
Watershed: 03050108 - Enoree
First Observed: 1999-10-21
Last Observed: 1999-10-21
Not Found:
Observer: G. Newberry
Viability Rank: AC - Excellent, good, or fair estimated viability
Rank Date: 2008-12-16
Rank Comments: Ranked by J. Holling, data manager. Population on Heritage Preserve, but small size may limit viability.
Population Data: Numerous clumps.
Habitat: Scattered in low wet woods leading down into the North Enoree River floodplain. Piedmont seepage forest with abundant growth of Japanese privet and Vietnam grass.
Directions: Cooley Bunched Arrowhead. Site is about 5 miles northwest of Travelers Rest, just north of Belvue School Road. From the junction of S-173 and Belvue Church Road, take Belvue Church Road 0.4 mile northwest and look for distrubed Virginia Pine along road frontage. Go north into hardwood bottoms, downslope towards river.
Land Owner: SC Dept. of Natural Resources-Belvue Springs Heritage Preserve
Specimen:

EO ID: 7399
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Campobello
Watershed: 03050107 - Tyger
First Observed: 1956-03-17
Last Observed: 1991
Not Found:
Observer: O.M. Freeman; D.A. Rayner; L.L. Gaddy; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure of management or protection.
Population Data: 1977: 30-50 plants. 1991: One hundred fifty plants.
Habitat: 1956: At springhead bog. 1977: A sourwood of 1' DBH is in the area. 1991: Found with Kalmia latifolia, scattered over much of narrow bluff.
Directions: Site is 1.5 miles south of Gowensville, on west side of SC 14.
Land Owner: -
Specimen: O.M. Freeman (5608). 1956. NCU.

EO ID: 7689
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Paris Mountain
Watershed: 03050108 - Enoree
First Observed: 1981-05-21
Last Observed: 1991
Not Found:
Observer: D.A. Rayner; G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure if population is still being impacted by runoff.
Population Data: Between 150 and 200 plants.
Habitat: On hummocks between main stream channel and seepage at base of east facing bluff. In red-maple/tupelo seepage swamp along tributary to Enoree River.
Directions: Sagittaria, Hydrology Site. Site is 100 feet north of SSR 173, about 2400 feet east of junction with US 25.
Land Owner: -
Specimen: D.A. Rayner (1253). 1981. USCH 21511.

EO ID: 7788
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with FS
Not processed per agreement with FS
Not processed per agreement with FS
Longitude: Not processed per agreem
Not processed per agreem
Not processed per agreem
County: Spartanburg
Topo Map: Fingerville East
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Unsure of management or protection.
Population Data: Thirteen plants.
Habitat: On streamside.
Directions: Arrowood Branch. Site is due east of Brooklyn, near North Carolina state line.
Land Owner: -
Specimen:

EO ID: 7930
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: [redacted]
Longitude: [redacted]
County: Spartanburg
Topo Map: Spartanburg
Watershed: 03050105 - Upper Broad
First Observed: 1981
Last Observed: 1991
Not Found:
Observer: M. Johnston; D.A. Rayner; G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manger. Unsure of management, protection or if destroyed by highway development.
Population Data: Two small colonies (4 X 3 feet and 2 X 2 feet in size).
Habitat: On stream bank.
Directions: Chinquapin Creek. Site is just south of the California Street Bridge over Chinquapin Creek. Area threatened by highway development.
Land Owner: -
Specimen:

EO ID: 7931
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville
Topo Map: Taylors
Watershed: 03050108 - Enoree
First Observed: 1985-09-03
Last Observed: 1985-09-03
Not Found:
Observer: D.A. Rayner; J.A. Sorrow
Viability Rank: H? - Possibly historical
Rank Date: 2010-05-14
Rank Comments: Ranked by J. Holling, data manager, based on last observation date.
Population Data:
Habitat: On hummocks adjacent to small north-south seep.
Directions: On south side of small northeast-southwest branch of Enoree River. Site is 150 yards east of the head of the branch, about 250 yards east of Jackson Grove Church at junction of SC 253 and SSR 262.
Land Owner: -
Specimen:

EO ID: 8503
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Fairly small population, and unsure of ownership, management, or protection.
Population Data: Sixty six plants.
Habitat: On north-northwest facing bluffs.
Directions: Site is 1 mile west-southwest from junction of US 176 and S-209 in Ingleside.
Land Owner: -
Specimen:

EO ID: 8504
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Landrum
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Good size population, but unsure of ownership, management, or protection.
Population Data: Two hundred twenty one plants.
Habitat: On lower slopes of norht facing bluff above branch.
Directions: Unnamed branch of Clear Branch Creek. Site is 0.6 mile west 5* south from junction of US 176 and S-209 in Ingleside.
Land Owner: -
Specimen:

EO ID: 8667
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
County: Spartanburg
Topo Map: Pacolet
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On provate land, so unsure of management or protection.
Population Data: Part of a very large population (5000 plants total).
Habitat: On Kalmia bluffs overlooking Peter's Creek and Mineral Springs Creek, in piedmont cove forest.
Directions: Peter's Creek Dwarf-flowered Heartleaf Site. Site is northeast of Spartanburg, east of Saranac Lake Subdivision.
Land Owner: -
Specimen:

EO ID: 878
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Inman
Watershed: 03050105 - Upper Broad
First Observed: 1989
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: CD - Fair or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Small population. Unsure of management or protection.
Population Data: Between ten and twenty plants.
Habitat: On north facing slope.
Directions: Lake William Bowen. On south side of lake and the north side of Fagan Road, about 0.75 mile north-northeast of junction of SC 9 and SC 292.
Land Owner: -
Specimen:

EO ID: 8856
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Greenville, Spartanburg
Topo Map: Landrum, Campobello
Watershed: 03050105 - Upper Broad
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: D.A. Rayner
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-12
Rank Comments: Ranked by J. Holling, data manager. Good size population, but unsure of ownership, management, or protection.
Population Data: One hundred ninety eight plants, with *Rhododendron maximum*.
Habitat:
Directions: Site is 0.25 mile due east from the SC 14 bridge over the South Pacolet River.
Land Owner: -
Specimen:

EO ID: 8981
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Valley Falls, Spartanburg
Watershed: 03050105 - Upper Broad
First Observed: 2000-06-22
Last Observed: 2000-10-09
Not Found:
Observer: C.S. Carr; E. Fabio; G. Newberry
Viability Rank: BC - Good or fair estimated viability
Rank Date: 2008-12-16
Rank Comments: Ranked by J. Holling, data manager. Population on USC-Spartanburg land, but unsure of protection or management.
Population Data: 2000-06(Carr): Several locations, with one plant observed observed 200-250 feet downstream of other plants. 2000-10(Fabio & Newberry): 250-300 plants.
Habitat: Observed along the stream banks. The single plant was on the stream bank of a steeply sloped, entrenched area. 2000: On north facing slope on south side of creek, in a narrow zone below hill and above sewer line. A dirt track leading east from Rampey Center and athletic field transects the population. Associated species include *Kalmia latifolia*, *Galax aphylla*, and *Epigaea repens*. At one time, the population probably extended all the way to the stream. Clear cutting and the construction of the sewer line appear to have extirpated the lower portion of the population.
Directions: USC Upstate campus. Near the nature trail at the Child Development Center. 2000: Lawsons Fork Creek at east edge of campus.
Land Owner: University of South Carolina Upstate-
Specimen:

EO ID: 9058
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Spartanburg
Topo Map: Campobello
Watershed: 03050107 - Tyger
First Observed: 1991
Last Observed: 1991
Not Found:
Observer: K. Rollins; G. Newberry
Viability Rank: BD - Good, fair, or poor estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. Unsure of management or protection.
Population Data: Clump (one of two in area with a total of 50-100 plants).
Habitat: In seepage at springs along tributary.
Directions: Unnamed tributary of Tyger River, south of S-75, about 1.5 miles southwest of Faith Missionary Church.
Land Owner: Judd Sloan-
Specimen:

EO ID: 916
Scientific Name: Hexastylis naniflora
Common Name: Dwarf-flowered Heartleaf
Fed Status: LT: Threatened
State Status:
Global Rank: G3
State Rank: S3
Latitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
Longitude: Not processed per agreement with Pla
Not processed per agreement with Pla
Not processed per agreement with Pla
County: Cherokee
Topo Map: Chesnee
Watershed: 03050105 - Upper Broad
First Observed: 1988
Last Observed: 1991
Not Found:
Observer: G. Newberry
Viability Rank: BC - Good or fair estimated viability
Rank Date: 2008-12-05
Rank Comments: Ranked by J. Holling, data manager. On National Battlefield, but unsure of management or protection.
Population Data: Twenty plants (one of three colonies in this area).
Habitat: At stream edge and on slopes above creek.
Directions: Cowpens National Battlefield. Along tributary of Island Creek that feeds Scruggs Lake (now drained).
Land Owner: US National Park Service-Cowpens National Battlefield
Specimen:

No rows found

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
1	**1.000**	D	Brushy Creek Bluff	100 200	2001	2001	Clev	N	
2	**8.000**	D	First Broad River: Knob Creek	< 20	2002	2000	Clev	N	
3	**11.000**	X	South Fork Catawba River: Henry Fork, Pleasant Grove	0	1981	1995	Burk	N	
4	**15.000**	E	Mount Zion Heartleaf Forest	unk	2000	2000	Linc	N	Presence noted, no plant count.
5	**23.000^**	A	Mill Creek Forest and Seep	1,733	2016	2015	Polk	N	NHP Comp Review and Mont Report.
6	**25.000**	U	Hildebran/Henry River Slopes	20	1985	1985	Burk	N	Identity of plants under question, no confirmation of HENA.
7	**27.000**	U	South Fork Catawba River: Henry Fork, Prospect Ridge	unk	1991	1991	Burk	N	Identity of plants under question, no confirmation of HENA.
8	**29.000^**	A	Island Creek Heath Bluff	50,541	2016	2016	Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
9*	**31.000*^**	C?	NCDOT TIP: R-2824	1,062	2010	2001	Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
10*	**32.000***	D	NCDOT TIP R-2824	457	2013	2011	Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
11	**33.000**	CD	Catawba River: Trib to Rhodhiss Lake	275	1996	1996	Burk	N	Owner, Burke County Public Works. At landfill.
12*	**44.000*^**	AB	Little Gunpowder Creek Rare Plant Site 1	617	2015	2011	Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
13	**48.000**	D	Catawba River: Lippard Creek tributary	> 40	1999	1999	Linc	N	
14	**57.000**	C	Second Broad River: Marrow Creek	> 300	2001	2001	Ruth	N	
15	**58.000**	D	Soutuh Fork Catawba River: Camp Creek	25 50	2002	2002	Cata	N	
16	**59.000**	C	Third Creek Rare Plant Site	< 200	2010	2010	Alex	N	Part of the population lies within the NCDOT roadway corridor for U. S. Highway 64. No formal protection.
17	**64.000**	U	Beaverdan Creek NA	< 500	2002	2002	Clev	N	ID needs confirmation.
18	**70.000**	D	Hicks Hill Bluffs and Forests	100 200	2002	2002	Clev	N	ID needs confirmation.
19	**71.000**	BC	Knob Creek NA	300	2005	2005	Clev	N	
20*	**77.000***	CD	Little Gunpowder Creek Rare Plant Site 2	699	2013	2007	Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
21	**85.000**	D	Buffalo Creek: northeast of SR 1903	267	2005	2005	Clev	N	EO is associated with NC DOT project B-3828. No impact planned. No formal protection.
22	**87.000**	D	Catawba River: Lower Creek: Miller Creek	0	2011	2011	Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
23	**89.000**	U	South Fork Catawba River: Jacob Fork, Whitener Crk	200	2003	2003	Burk	N	
24	**92.000**	BC	Second Broad River: Webb Creek headwater	200 400	2003	2003	Ruth	N	
25	**93.000**	D	West Shelby Mesic Slope		2005	2005			Parent EO
	93.034	D	West Shelby Mesic Slope	60	2005	2005	Clev	N	
	93.035	D	First Broad River: Brushy Creek	< 100	2016	2001	Clev	N	8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.
26	**96.000**	A	Murrays Mill/Upper Balls Creek NA		2013	2010			Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
	96.038^	CD	Catawba River: Deal Property	100 200	1996	1996	Cata	N	
	96.039^	D	Murrays Mill/Upper Balls Creek NA	< 50	2002	2002	Cata	?	Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
	96.184*^	A	Murrays Mill/Upper Balls Creek NA	11,860	2013	2010	Cata	Y	NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)
27	**97.000**	C	Sandy Run/Cliffside NA		2002	2002			Parent EO
	97.017	D	Broad River: Sandy Run Creek	50	1996	1996	Clev	N	
	97.018	D	Broad River: Sandy Run Creek	< 50	2001	2001	Clev	N	
	97.069	U	Sandy Run/Lovelace NA	100	2002	2002	Clev	N	ID needs confirmation.
	97.230	D	Sandy Run/Cliffside NA	50 100	2002	2002	Clev	N	
28	**98.000**	CD	Cat Square Heartleaf Forest		2012	2001			Parent EO
	98.002	X	South Fork Catawba River, Indian Creek	0	1957	1980	Linc	N	Extirpated
	98.003	D	Cat Square Heartleaf Forest	160	2001	1995	Linc	N	presence noted in 2001, 160 plants counted in 1995
	98.004	CD	Cat Square Heartleaf Forest	200	2001	2001	Linc	N	
	98.060	D	NCDOT TIP: B-2119	20 50	2012	2001	Linc	N	EO is associated with NC DOT project B-2119
29	**99.000**	A	Big Horse Creek Rare Plant Site	106,940	2015	2015			Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
	99.009^	AB	Hensons Creek Natural Area	n/a	2005	2005	Ruth	N	Presence noted in 2012 - no count made, 500 estimate plants in 2005
	99.010^	A	Kudzu Farm Rare Plant Site	n/a	2014	2013	Ruth	N	33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.
	99.037^	C	Broad River: Hunter Road	n/a	2005	2015	Ruth	N	includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.
	99.052^	C	Hensons Creek Natural Area	n/a	2005	2001	Ruth	N	200-300
	99.053^	D	Broad River: McKinney Bridge	n/a	2003	2003	Ruth	N	<35
	99.055^	AB	Broad River: Richardson Creek	n/a	2016	2015	Ruth	N	included with EO 37. NHP Comp Review and Mont Report.
	99.061^	B	Broad River: UT at SR1115 and 1116	n/a	2002	2002	Ruth	N	750-1000
	99.062^	C	Broad River: Richardson Creek	n/a	2002	2002	Ruth	N	200-500. NHP Comp Review and Mont Report.
	99.063^	D	Broad River: Hayes Lake	n/a	2001	2001	Ruth	N	20-25
	99.075^	A	Brice Rare Plant Site	n/a	2013	2013	Ruth	N	>7000. NHP Comp Review and Mont Report.
	99.076^	BC	Big Horse Rare Plant Site	n/a	2015		Ruth	Y	included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.
	99.079^	C	Broad River: Richardson Creek	n/a	2012	2001	Ruth	N	200-300. NHP Comp Review and Mont Report.
	99.090^	D	Broad River: Richardson Creek	n/a	2003	2003	Ruth	N	100-200
	99.121^	B	Broad River: Dills Creek	n/a	2004	2004	Ruth	N	300
	99.172^	D	Big Horse Rare Plant Site	n/a	2012	2012	Ruth	Y	50-100, Parris Heartleaf RHA voluntary agreement.
	99.181^	AB	Broad River: Dills Creek	n/a	2012	2001	Ruth	?	This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.
	99.182^	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	included with EO 249
	99.249	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.
	99.250	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	included with EO 249
	99.251	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	included with EO 249
	99.267	CD	Kudzu Farm	n/a	2006	2008	Ruth	N	150-250
	99.268	D	Kudzu Farm	n/a	2006	2008	Ruth	N	25-30
	99.319	E	Broad River: Big Horse Creek	unk	2012	2012	Ruth		observed but no count made.
30	**100.000**	A	Broad River/Sandy Run NA		2012	2012			Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
	100.014^	C?	Broad River/Sandy Run NA	177	2009	2001	Clev	N	EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000
	100.049^	A	Broad River/Sandy Run NA	1,118	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.
	100.050^	A	Broad River/Sandy Run NA	4,801	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.
	100.051^	A	Broad River/Sandy Run NA	2,363	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.
	100.073^	A	Broad River/Sandy Run NA	13,595	2012	2012	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.
	100.074^	B	Broad River/Sandy Run NA	722	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
	100.149^	A	Broad River/Sandy Run NA	3,280	2012	2009	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)
	100.233^	A	Broad River/Sandy Run NA	3,383	2012	2012	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)
	100.235	CD	Broad River: Trib N of Broad River and SE of Lake Houser	100 200	2001	2005	Clev	N	Outside Broad River Tract
	100.236^	C	Broad River/Sandy Run NA	150 300	2001	2005	Clev	N	Outside Broad River Tract
	100.237^	E	Broad River/Sandy Run NA	> 200	2012	2001	Clev	N	Outside Broad River Tract
	100.238^	A	Broad River/Sandy Run NA	1,865	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)
	100.239^	D	Broad River/Sandy Run NA	165	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)
	100.240^	F	Broad River/Sandy Run NA	20	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - "F"
	100.241^	D	Broad River/Sandy Run NA	115	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)
	100.246^	D	Broad River/Sandy Run NA	< 100	2001	2005	Clev	N	Outside Broad River Tract
31	**101.000**	D	Camp Creek Bluff		2002	2002			Parent EO
	101.005	D	Camp Creek Bluff	100 200	2002	2002	Burk	N	
	101.006	X	Camp Creek Bluff North	0	1981	1995	Burk	N	
	101.180	D	Camp Creek Bluff	100	1995	1981	Burk	N	
32	**117.000**	U	First Broad River: Knob Creek: Lemon Gap		2003	2003			Parent EO
	117.083	U	First Broad River: Knob Creek: Lemon Gap	100	2003	2003	Burk	N	
	117.084	U	First Broad River: Knob Creek: Lemon Gap	100 200	2003		Clev	N	
33	**118.000**	A	Big Island Carolina Hemlock Bluff	500	2004	2004	Ruth	N	
34	**124.000**	D?	Sandy Spring Church Springhead Swamp	20	2005	2005	Polk	N	
35	**125.000^**	A	New Hope Springhead Swamp	12,235	2016	2015	Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.
36	**130.000**	B?	Kross Keys NA	> 111	2005	2005	Polk	N	Likely more present
37	**151.000**	C	Broad River: Richardson Creek	100 200	2002	2002	Ruth	N	
38	**154.000^**	C	Facebook Site	2,576	2016	2015	Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.
39	**157.000*^**	AB	First Broad River: Crooked Run Creek	330	2010	2005	Clev	N	DOT no longer monitors, too far from ROW.
40	**158.000*^**	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	2016	2016	Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.
41	**176.000**	A	Davenport Road/Mountain View Rare Plant Site	6,750	2016	2016			Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.
	176.167^	A	Davenport Road/Mountain View Rare Plant Site	n/a	2005	2015	Ruth	N	included with EO 107. NHP Comp Review and Mont Report.
	176.168^	A	Davenport Road/Mountain View Rare Plant Site	n/a	2005	2005	Ruth	N	1113. NHP Comp Review and Mont Report.
	176.169^	D	Davenport Road/Mountain View Rare Plant Site	n/a	2016	2016	Ruth	N	35. NHP Comp Review and Mont Report.
	176.170^	C	Davenport Road/Mountain View Rare Plant Site	n/a	2016	2015	Ruth	N	191. NHP Comp Review and Mont Report.
42	**177.000**	A	Broad River: Floyds Creek	12,687	2016	2016			Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.
	177.016^	E	Broad River: Floyds Creek	n/a	2014	2012	Ruth	N	5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).
	177.107^	B	Broad River: Floyds Creek	n/a	2008	2015	Ruth	N	241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remianing plants have no formal protection. (TB 9/21/2017)
	177.122^	B?	Broad River: Floyds Creek	n/a	2008	2007	Ruth	N	123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).
	177.163^	B	Broad River: Floyds Creek	n/a	2016	2015	Ruth	N	included with EO 107

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes	
	177.164^	A	Broad River: Floyds Creek	n/a	2016	2005	Ruth	N	537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)	
	177.165^	C	Broad River: Floyds Creek	n/a	2005	2005	Ruth	N	included with EO 107	
	177.166^	CD	Broad River: Floyds Creek	n/a	2005		Ruth	N	included with EO 107	
43	**178.000**	A	Catawba River: Hoyle Crk-Micol Crk		2013	2016			Parent EO.	
	178.159*^	A	Catawba River: Hoyle Crk-Micol Crk	2182	2013	2005	Burk	N	Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.	
	178.160^	A	Catawba River: Hoyle Crk-Micol Crk	733	2013	2008	Burk	N	loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)	
	178.161^	A	Catawba River: Hoyle Crk-Micol Crk	2,754	2009		Burk	N	In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.	
	178.254^	D?	Catawba River: Hoyle Crk-Micol Crk	> 168	2010	2010	Burk	Y	Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).	
	178.255^	D	Catawba River: Hoyle Crk-Micol Crk	unk	2006	2006	Burk	Y	286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.	
	178.256^	C?	Catawba River: Hoyle Crk-Micol Crk	> 376	2010	2010	Burk	Y	Permanent conservation easement with Burke Cty and Public School System. "Considerable" number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).	
	178.280^	C	Catawba River: Hoyle Crk	126	2009	2009	Burk	Y	Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)	
	178.281^	E	Catawba River: Hoyle Crk-Micol Crk	unk	2009	2009	Burk	N	presence noted, no count made - outside of NCDOT ROW	
	178.282^	E	Catawba River: Hoyle Crk-Micol Crk	unk	2009	2009	Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.283	E	Catawba River: McGalliard Creek	unk	2009	2009	Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.284	E	Catawba River: McGalliard Creek	unk	2009	2009	Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.310	A	Megalliard Creek Slopes; Lake Rhodhiss	1,500 2,000	2016	2016	Burk	Y	Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.	NHP
44	**179.000**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		2012	2005			Parent EO	
*	179.030*	CD	NCDOT TIP R-2824	3,291	2013	2001	Cata	N	DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants total in the EO. Last report (2013)documented 4,719 plants.	
	179.162*	D	NCDOT TIP R-2825	21	2012	2005	Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.	
45	**183.000**	CD	Catawba River: North Fork Mountain Creek	200 300	2005	2005	Cata	Y?	The land where the plant populations are located and the land surrounding the plant populations have been designated as common open space. Eastern-most portion of the polygon falls partially within Mitigation Services Easement. MacLeod Ski Lake site.	
46	**195.000**	D	First Broad River: Hickory Creek	22	2006	2006	Clev	N	In DOT study area. No impacts associated with Shelby bypass. No formal protection.	
47	**206.000**	D	Buffalo Creek: Ravine	90	2007	2007	Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
48	**207.000**	C	Buffalo Creek: Trib S of I-74	346	2000	2000	Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
49	**208.000^**	A	Buffalo Creek: Potts Creek	50 100	2012	2007	Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
50	**210.000**	E	Catawba River: Drowning Creek UT	unk	2001	2001	Burk	N	No plant count in EO data. Associated with B-3122, Bridge 24. No formal protection.	
51	**211.000**	A	First Broad Hop-Hornbeam NA		2002	2002			Parent EO	
	211.072^	D	First Broad Hop-Hornbeam NA	> 100	2002	2002	Clev	N		
	211.194^	A	First Broad River: unnamed tributary	1,965	2000	2000	Clev	Y	Pending NCDOT purchase for right-of-way protection, as of May 2009. Three pops have secured ROW for formal protection, we will receive updated data (TB 9/21/2017).	
52	**214.000**	A	Buffalo Creek: Tributaries N and S of SR 2047		2012	2000			Parent EO	
	214.201^	D	Buffalo Creek: Tributary S	64	2000	2000	Clev	?	14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
	214.202^	A	Buffalo Creek: Ravine N	1,627	2000	2000	Clev	?	14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.
	214.203^	B	Buffalo Creek: 3rd Tributary S	96	2007	2007	Clev	?	110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?
	214.204^	A?	Buffalo Creek: S of SR 2128	?	2000	2000	Clev	?	3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT
	214.205^	D	Buffalo Creek: N of SR 2128	171	2000	2000	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.
	214.209^	BC	Buffalo Creek: Tributary E of County Fairgrounds	196	2000	2000	Clev	?	Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.
	214.212^	D	Buffalo Creek: Slope along Trib just N of SR 2047	97	2000	2000	Clev	N	In DOT study area for R-2707. No formal protection.
	214.213^	CD	Buffalo Creek: Ravine just S of SR 2047	50 100	2012	2012	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT
53	**216.000**	A	Buffalo Creek: Kings Mountain Res		2016	2000			Parent EO
	216.028	B	Buffalo Creek Rare Plant Site	250	2016	2016	Clev	Y	This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)
	216.196	D	Buffalo Creek: Friendship Chapel	56	2006	2006	Clev	N	In Dot study area. No formal protection.
	216.197^	A	Buffalo Creek: Kings Mountain Res	2,067	2000	2000	Clev	?	NC DOT plans "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement
	216.198^	B	Buffalo Creek: Kings Mountain Res	450	2007	2007	Clev	N	In Dot study area. No formal protection.
	216.199^	B	Buffalo Creek: Kings Mountain Res	432	2007	2007	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.
	216.200^	D	Buffalo Creek: Kings Mountain Res	55	2000	2000	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT
54	**217.000**	B	Broad River: Brushy Creek		2016	2016			Parent EO
	217.190	F	Broad River: Brushy Creek	0	2000	2006	Clev	N	No plants found.
	217.191*	D	Broad River: Brushy Creek	264	2014	2000	Clev	Y	DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.
	217.192	C	Broad River: Brushy Creek	494	2016	2016	Clev	Y	NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).
	217.193	C	Broad River: Brushy Creek	271	2000	2000	Clev	?	NC DOT proposes to protect Site 9 through a conservation easement.
	217.305	CD	Washburn Switch Business Park	70	2015	2015	Clev	N	Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.
55	**219.000**	D	Smith Cliff/Henry Fork River	31	2005	2005	Burk	N	
56	**226.000**	B	Catawba River: Lake James		2006	2006			Parent EO
	226.045	D	Catawba River: Lake James	11	2005	2005	Burk	N	
	226.222	CD	Lake James, SW of bridge	156	2006	2006	Burk	?	Likely more plants present, up to 300? Duke has placed a conservation buffer around plants. Unk if this is permanently binding. Ask Duke. Monitoring report in file - Bridgewater Development. Who is contact?
	226.223	X	Lake James, Paddy Creek	0	2006	2006	Burk		
	226.224	BC	Lake James, Paddy Creek	87	2006	2006	Burk	?	Likely more plants present, up to 700? Duke has placed a conservation buffer around plants. Unk if this is permanently binding. Ask Duke.
	226.225	A	Lake James, Linville Dam	370	2005	2006	Burk	N	
57	**227.000^**	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	2014	2014	Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?
58	**229.000**	C?	Hogpen Branch Transplant Site	unk	2005	2007	Ruth	Y	10% of impacted plants were to be moved. 500-550 plants in 2006, all were expected to be impacted by construction. No estimation of remaining plants. CE at Kudzu Farm as mitigation - was this done? Ask Corps. 9/8 - Spoke with David Brown at Corps. No CE at Kudzu Farm, unimpacted plants were preserved on site, likely less than 500. Associated with the quarry??
59	**232.000**	A?	Buffalo Creek Rare Plant Site		2012	2005			Parent EO.
	232.046	A	Buffalo Creek Rare Plant Site	500	2005	2005	Clev	N	Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).
	232.231	D	Buffalo Creek Rare Plant Site	20	2012	2012	Clev	N	Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).
60	**243.000**	AB	Jacob Fork West Corridor		2012	2007			Parent EO

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
	243.012^	A	Jacob Fork West Corridor	> 1,000	1995	1995	Cata	?	Catawba County Wildlife Club RHA voluntary agreement.
	243.242^	D	Jacob Fork West Corridor	4	2005	2005	Cata	N	
	243.269^	B	Jacob Fork West Corridor	> 200	2007	2008	Cata	Y	TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).
	243.270^	C?	Jacob Fork West Corridor	75 100	2012	2008	Cata	Y	TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.
61	**245.000**	AB	Floyds Creek Tributray Rare Plant Site		2010	2005			Parent EO
	245.091	D	Broad River: Floyds Creek	30	2012	2003	Ruth	N	
	245.113	C	Floyds Creek Tributray Rare Plant Site	1,113	2010	2007	Ruth	N	7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?
	245.175	C	Floyds Creek Tributray Rare Plant Site	unk	2010	2007	Ruth	N	included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.
62	**247.000**	A	New Bethel Rare Plant Site		2015	2015			Parent EO, NC DOT Mitigation Site
	247.013	D	Sandy Mush Outcrop	< 100	2005	2005	Ruth	N	
	247.056	D	Broad River: Floyds Creek	< 150	2002	2001	Ruth	N	
	247.080^	D	Broad River: Floyds Creek	50	2012	2003	Ruth	N	No plant count made in 2012. 50 plants counted in 2003.
*	247.106*^	A	New Bethel Rare Plant Site	4,547	2015	2008	Ruth	Y	Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).
	247.114^	D	Broad River Floyds Creek	0	2010	2003	Ruth	N	14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017
	247.115^	C	Broad River Floyds Creek	133	2005	2007	Ruth	N	Combine with EO 114
	247.173^	D	Broad River Floyds Creek	102	2005	2003	Ruth	N	inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??
	247.174^	D	Broad River Floyds Creek	84	2010	2003	Ruth	N	35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area
*	247.286*^	B	New Bethel Rare Plant Site	326	2015	2015	Ruth	Y	Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.
63	**248.000**	C	Jonas Road Rare Plant Site		2005	2005			Parent EO
	248.040	C	Jonas Road Rare Plant Site	150 200	2005	2005	Ruth	N	
	248.054	D	Broad River: McKinney Creek	20 30	2014	2001	Ruth	N	20-30 plants noted for last count in 2005
64	**252.000**	B	South Fork Catawba River, Henry Fork		2007	2005			Parent EO
	252.019	D?	NCDOT TIP: R-0085	unk	2007	2007	Cata	?	EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.
	252.020	B	NCDOT TIP: R-0086	296	2007	2005	Cata	?	May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.
65	**261.000**	B	Leepers Creek Heartleaf Site		2006	2006			Parent EO
	261.258^	B	Lincoln-Lincoln County Airport and Leepers Creek	571	2006	2006	Linc	N	1,246 totsl plants, 675 plants from this location moved to Rhyne Conservation Preserve (EO 302).
	261.259^	B	Lincoln-Lincoln County Airport and Leepers Creek	6,461	2005	2005	Linc	N	No access per NHP. Maybe an airport expansion in the future?
	261.263^	E	Leepers Creek Heartleaf Site	unk	2001	2001	Linc	N	presence noted, no count made
66	**264.000**	E	Carpenter Creek Heartleaf Site	unk	2001	2001	Linc	N	presence noted, no count made
67	**265.000**	E	June Bug Woods/Seagletown Woods	unk	2000	2000	Linc	N	presence noted, no count made
68	**266.000**	E	Indian Creek Woods	unk	2001	2001	Linc	N	presence noted, no count made
69	**271.000**	C?	Pott Creek	5 6	2012	2012	Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
70	**272.000**	BC	No Business Creek, Boyd Tract	75 150	2007	2007	Clev	N	
71	**274.000**	A?	Broad River/Sandy Run NA	100	2012	2008	Clev	Y	Broad River Greenway, Town of Boiling Springs
72	**275.000***	C	Buffalo Shoals Creek	257	2014	2014	Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
73	**276.000^**	A	Cliffside Steam Station	39,535	2016	2016	Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
74	**277.000**	D	Hickory: Martin Marietta Quarry	0	2011	2011	Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
75	**278.000**	H	West Fork Brushy Creek	1	1980	1980	Clev	N	Last observation in 1980, rank is now historical.
76	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	?	2009	2009	Linc	N	small
77	**287.000**	AB	Fox Knoll Farm	?	2016	2016	Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
78	**291.000**	C	Gunpowder Creek	82	2012	2010	Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
79	**292.000**	D	Forest City: Adj to Isothermal CC	150	2010	2010	Ruth	N	Owner, Ruthford County.

Populations	EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
80	**293.000**	E	Killian Crossroads	unk	2010	2010	Cata	N	No plant count in EO data.
81	**295.000**	B	Hickory Area		2016			Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
	295.021	A	Hickory Area, Catawba River: Geitner Park	> 300	2005	2005	Burk	?	Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?
	295.294	C	Hickory Area: Bud Geitner Park Transplant Site	153	2016	2014	Burk	?	Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.
	295.313	E	NCDOT TIP U-4700	unk	2012	2012	Cata	N	Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.
	295.314	E	NCDOT TIP U-4700	unk	2012	2012	Cald	N	Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).
82	**296.000**	CD	UT of Kings Mountain Res	100	2012	2012	Gast	N	
83	**297.000**	CD	Beaverdam Crk at First Broad River	unk	2011	2011	Clev	N	No plant count in EO data.
84	**298.000**	C	Brushy Creek Headwaters	250 300	2014	2014	Clev	N	
85	**299.000**	D	Lincoln County, SR-1314	27	2014	2014	Linc	N	In DOT study. No formal protection.
86	**300.000**	D	Levan Family Farm	50	2013	2013	Ired	N	
87	**302.000**	A	Rhyne Conservation Preserve		2016	2014			Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
	302.047	D	NCDOT Project R-617C, South Fork Catawba	5	2005	2005	Linc	N	In DOT ROW, no formal protection.
	302.262	A	Rhyne Conservation Preserve	19,873	2016	2016	Linc	Y	Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.
88	**303.000**	AB	Smith Cliff/Henry Fork River	?	2015	2015	Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
89	**304.000**	B?	Simms Hill/Little River Uplands	200 250	2015	2015	Burk	Y	Conservation site managed by the Foothills Conservancy of NC
90	**306.000**	D	Fanjoy Road Site	75	2015	2015	Ired	N	
91	**307.000**	C	First Broad River: Beaverdam Creek tribs		2006	2006		?	Parent EO
	307.036	CD	First Broad River: Beaverdam Creek, UT	?	1997	1997	Clev	N	sparse
	307.187	C	First Broad River: Beaverdam Creek, Ravine	264	2001	2001	Clev	N	In DOT study area, no formal protection.
	307.188	E	First Broad River: Beaverdam Creek, trib N of SR 1316	471	2000	2000	Clev	Y	NCDOT mitigation site. Cows removed? Portions of Sites 1 and 2 are contained within the DOT ROW. Per 2015 draft report, 471 plants in entire EO. 313 plants in protected DOT ROW. Has formal protection in ROW.
	307.189	D	First Broad River: Beaverdam Creek, ravine to UT	1	2006	2006	Clev	N	
92	**308.000**	C	Glade Creek, Alex County	2,194	2017	2017	Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
93	**309.000**	D?	South Mountains Pleasant Grove Uplands	?	2016	2016	Burk	N	few
94	**311.000**	A	Collinsville (Hughes) Creek Slopes	200 750	2016	2016	Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
95	**312.000**	A	Richardson Creek trib above Toms Lake	?	2016	2016	Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
96	**316.000**	C	Northern Catawba County		2017	2017		?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
	316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	2006	2006	Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
	316.315	D	NC-127/Cloninger Mill Road	60	2017	2017	Cata	?	Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A
97	**317.000**	D	NCDOT TIP R-3603A	30	2017	2017	Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
98	**318.000**	C	Burke County - Drowning Creek UT	356	2017	2017	Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
99	**320.000**	E	Hickory Creek - UT (Shelby High School)	15	2016	2016	Clev		
100	**321.000**	B	Gunpowder Creek: South of Hudson	2475	2012	2012	Cald		NCDOT
	Add		Rock Barn Solar Farm	821			Cata	Y	Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded. NHP
			Total	367,690					

* DOT monitors

^ In 2011 5-YR Review as Populations estimated to contain >1,000 plants.

Pops/subpops >1,000 plants, current data.

green Broad River Greenway

2011
Hexastylis naniflora (Dwarf-flowered heartleaf)
Former TIP No. U-2414A (Current ID R-9999L)
Inventory and Monitoring Report
Catawba County, North Carolina

Contact Person:

Cheryl Gregory
Environmental Senior Specialist
North Carolina Department of Transportation
Natural Environment Section
Biological Surveys Group

1598 Mail Service Center
Raleigh, NC 27699
919-707-6142
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Species: *Hexastylis naniflora* (Dwarf-flowered heartleaf)

Site: [Former TIP No. U-2414A Tate Boulevard SE] (Catawba County)

NC NHP EO number(s): 30, EO ID 14501

NCDOT Point of Contact (POC): Cheryl Gregory, Tim Bassette, Jared Gray

Signed ROW occurrence? No

Site management plan: N/A

Site protections:
A small portion of this occurrence (82 plants, November 3 & December 12-13, 2011 surveys) is situated within the existing North Carolina Department of Transportation right-of-way (north and south) of Tate Boulevard (SR 1692). This portion of the occurrence, however, is a roadside population that is not under formal protection from a binding agreement. The remainder of the occurrence, which sits outside of the existing NCDOT right-of-way, is not under any formal protection from a binding agreement.

Origin of species at this site: Native

Status of species at this site: Extant

Species short-term trend at this site (relative to last count): Unknown

Species long-term trend at this site (averaged over multiple counts): Unknown

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Status of NCDOT commitments pledged during ESA Section 7 consultations:

A. **NCDOT project ID**: R-9999L, Tate Boulevard Former TIP U-2414A
USFWS log number: 4-2-94-034

On September 11, 1995 the United States Fish and Wildlife Service gave concurrence with the not likely to adversely affect determination pertaining to project U-2414A. Per the USFWS letter of concurrence for former TIP U-2414A, NCDOT has not pledged any actions that directly relate to the rescue, monitoring and/or management activities of *H. naniflora*.

B. **NCDOT project ID**: TIP No. R-2824 (Upgrade of Existing Lovelady Road (SR 1546) from Laurel Street (SR 1545) in Valdese to Malcolm Boulevard (SR 1001) in Rutherford College, Burke County, North Carolina.
USFWS log number: 4-2-09-367

From pages 31-34 of the Biological Assessment for TIP R-2824 (Proposed Upgrade of Lovelady Road, May 8, 2009), and Appendix B of the Biological Opinion for the same project (November 13, 2009), NCDOT committed to assist USFWS with the five-year review process by providing information about several populations of *H. naniflora* that are either held in conservation easements or occur within

NCDOT right-of-way (this assistance serves as a conservation measure for R-2824). The population of *H. naniflora* associated with U-2414A is included in this group.

Because *H. naniflora* is located within the right-of-way of U-2414A, NCDOT will monitor Element Occurrence No. 30 associated with U-2414A, the results of which will be incorporated into the data spreadsheet, submitted to USFWS annually on January 1. Information generated by the following activities will be included in the spreadsheet.

Every two years for no more than six years, NCDOT will:
• Enumerate plants via direct count and/or sample plot estimates.
• Delineate changes to the population boundary using GPS/GIS, computing changes to acreages of occurrence areas, computing *H. naniflora* plant densities for each occurrence, and estimating changes to acreages of suitable habitat areas.
• Perform a qualitative analysis to include estimating the population viability, phenology, and evidence of reproduction; identifying associate species; identifying invasive, exotic species and documenting their degree of threat; and assessing the topographic position, moisture regime, amount of sunlight reaching *H. naniflora* plants, as well as other natural and human threats to the species, including but not limited to stream bank erosion, all-terrain vehicles, effects from historical herbicide applications and the lack of such applications in the future, effects from drought or excessive precipitation, and land clearing and draining activities.
• Prepare a North Carolina Natural Heritage Program – Endangered and Rare Plant Field Survey Form that incorporates both types of data.
• Analyze population trends by comparing recent size estimates to data from previous years.

Status: This monitoring report documents the first of three post-construction monitoring efforts associated with EO No. 30 along the former U-2414A.

Status of terms and conditions from applicable NC Plant Conservation Program permits:
No applicable permits from the NC Plant Conservation Program have been applied for or been issued for this project.

Table 1. *Hexastylis naniflora* data for former TIP No. U-2414A (EO 30)				
Location	**1996/2001***	**2011**	**Size (ac)**	**Density (plant/ac)**
North of Tate Blvd	No Data	3,425	4.24	808
South of Tate Blvd	No Data	1,607	2.36	681
Totals	**No Data**	**5,032**	**6.60**	**762**
* These surveys were conducted using a presence/absence method and no individual species counts were recorded.				

Discretionary actions undertaken by NCDOT and partners:
No discretionary activities (i.e. rescue, relocation, augmentation or management) have been or are anticipated to be undertaken by NCDOT and its partners.

References

North Carolina Department of Transportation. 1995. Administrative Action Environmental Assessment for T.I.P. Project U-2414A, Catawba County, North Carolina. pg. 18.

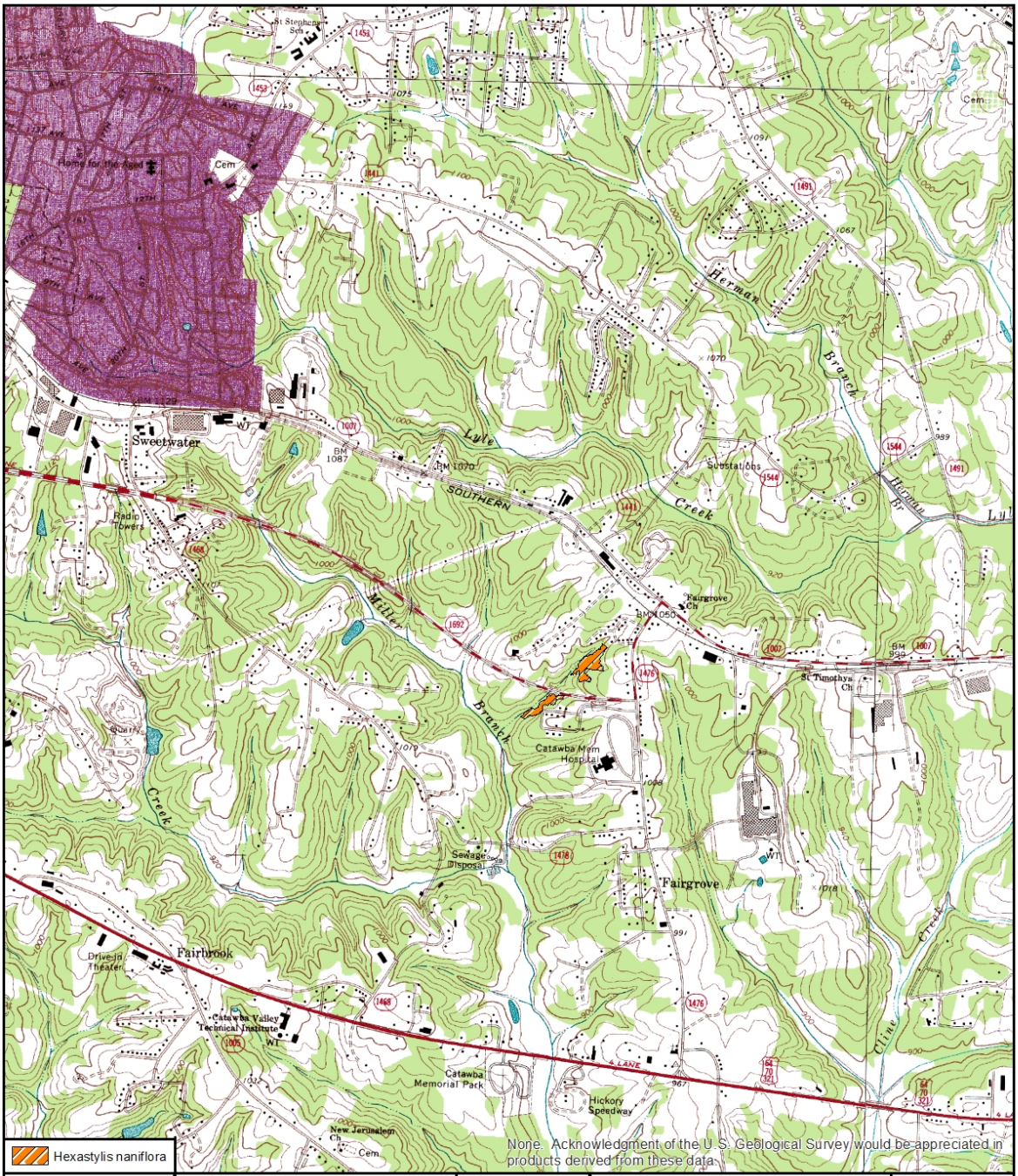
North Carolina Department of Transportation. 2009. Biological Assessment for the Proposed Upgrade of Lovelady Road, TIP No.R-2824, in Burke County, North Carolina.

United States Fish and Wildlife Service. 1995. Service Concurrence: *Proposed Extension of Tate Boulevard, TIP No.U-2414, in Catawba County, North Carolina, and Its Effects on the Federally Threatened Dwarf-Flowered Heartleaf.* Log Number 4-2-94-034.

United States Fish and Wildlife Service. 2009. Biological Opinion: *Proposed Upgrade of Lovelady Road, TIP No.R-2824, in Burke County, North Carolina, and Its Effects on the Federally Threatened Dwarf-Flowered Heartleaf.* Log Number 4-2-09-367.

Appendix A. Monitoring Data and Discussion

Surveys were conducted by NCDOT biologists on April 17, 1996, prior to roadway alternative selection and again on October 9, 2001 prior to project construction. These surveys were conducted using a presence/absence method; no individual species counts were recorded. Following project commitments established for R-2824 (Lovelady Rd), surveys were again conducted north and south of Tate Boulevard by NCDOT biologists Tim Bassette, Jared Gray, Matt Haney, Neil Medlin, Steve Mitchell and Heather Wallace on November 3 and December 12-13, 2011. During these 2011 surveys, plants were enumerated via a direct census count and the population boundary was GPS located and recorded. Figures 1 and 2 depict EO 30 as determined during the 2011 monitoring period. No NCNHP Field Survey Forms were completed for the 2011 monitoring period. Because no baseline data was collected, population trends cannot be determined at this site.


Hexastylis naniflora
None. Acknowledgment of the U.S. Geological Survey would be appreciated in products derived from these data.
Prepared by NCDOT 8/21/14
Former U-2414A
Hexastylis naniflora (EO No. 30)
as determined during the
2011 monitoring period
0 0.125 0.25 Miles
FIG
1


SR2339
SR3019
34th Street Pkwy
SR1007
SR1665
1st Avenue
2nd Avenue
33rd Street
SR1692
SR1578
SR1579
31st
SR1580
SR1476
SR2271
11th Avenue
Miller Branch (Belleks Dry Branch)
Hexastylis naniflora
US Highway
State Route
NC Highway
Interstate
Roads Non System
Hydrology 24k
Major Hydrography
NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board
Prepared by NCDOT 8/21/14
Former U-2414A
Hexastylis naniflora (EO No. 30)
as determined during the
2011 monitoring period
0 0.02750.055 Miles
FIG
2

2013
Hexastylis naniflora (Dwarf-flowered heartleaf)
Former TIP No. U-2414A (Current TIP No. R-9999L)
Inventory and Monitoring Report
Catawba County, North Carolina

Contact Person:

Tim Bassette
Environmental Program Consultant
North Carolina Department of Transportation
Natural Environment Section
Biological Surveys Group

1598 Mail Service Center
Raleigh, NC 27699
919-707-6104
tpbassette@ncdot.gov

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APPENDICES

APPENDIX A. MONITORING DATA AND DISCUSSION

APPENDIX B. FIGURES

APPENDIX C. NORTH CAROLINA NATURAL HERITAGE PROGRAM – ENDANGERED AND RARE PLANT SURVEY FORM

Species: *Hexastylis naniflora* (Dwarf-flowered heartleaf)

Site: [Former TIP No. U-2414A Tate Boulevard SE] (Catawba County)

NC NHP EO number(s): 30, EO ID 14501

NCDOT Point of Contact (POC): Tim Bassette

Signed ROW occurrence? No

Site management plan: N/A

Site protections: A small portion of this occurrence (71 plants) is situated within the existing North Carolina Department of Transportation (NCDOT) right-of-way (north and south) of Tate Boulevard (SR 1692). This portion of the occurrence, however, is a roadside population that is not under formal protection from a binding agreement. The remainder of the occurrence, which sits outside of the existing NCDOT right-of-way, is not under any formal protection from a binding agreement.

Origin of species at this site: Native

Status of species at this site: Extant

Species short-term trend at this site (relative to last count): Decreasing

Species long term trend at this site (averaged over multiple counts): Decreasing

---

Status of NCDOT commitments pledged during ESA Section 7 consultations:

A. **NCDOT project ID:** R-9999L, Tate Boulevard Former TIP U-2414A
USFWS log number: 4-2-94-034

On September 11, 1995 the United States Fish and Wildlife Service (USFWS) gave concurrence with the not likely to adversely affect determination pertaining to project U-2414A. Per the USFWS letter of concurrence for former TIP U-2414A, NCDOT has not pledged any actions that directly relate to the rescue, monitoring and/or management activities of *H. naniflora*.

B. **NCDOT project ID:** TIP No. R-2824 (Upgrade of Existing Lovelady Road (SR 1546) from Laurel Street (SR 1545) in Valdese to Malcolm Boulevard (SR 1001) in Rutherford College, Burke County, North Carolina.
USFWS log number: 4-2-09-367

From pages 31-34 of the Biological Assessment for TIP R-2824 (Proposed Upgrade of Lovelady Road, May 8, 2009), and Appendix B of the Biological Opinion for the same project (November 13, 2009), NCDOT committed to assist USFWS with the five-year review process by providing information about several populations of *H. naniflora* that are either held in conservation easements or occur within NCDOT right-of-way (this assistance serves as a conservation measure for R-2824). The population of *H. naniflora* associated with U-2414A is included in this group.

Because *H. naniflora* is located within the right-of-way of U-2414A, NCDOT will monitor Element Occurrence (EO) No. 30 associated with U-2414A, the results of which will be incorporated into the data spreadsheet, submitted to USFWS annually on January 1. Information generated by the following activities will be included in the spreadsheet.

Every two years for no more than six years, NCDOT will:

- Enumerate plants via direct count and/or sample plot estimates
- Delineate changes to the population boundary using Global Positioning System/Geographic Information System, computing changes to acreages of occurrence areas, computing *H. naniflora* plant densities for each occurrence, and estimating changes to acreages of suitable habitat areas.
- Perform a qualitative analysis to include estimating the population viability, phenology, and evidence of reproduction; identifying associate species; identifying invasive, exotic species and documenting their degree of threat; and assessing the topographic position, moisture regime, amount of sunlight reaching *H. naniflora* plants, as well as other natural and human threats to the species, including but not limited to stream bank erosion, all-terrain vehicles, effects from historical herbicide applications and the lack of such applications in the future, effects from drought or excessive precipitation, and land clearing and draining activities.
- Prepare a North Carolina Natural Heritage Program – Endangered and Rare Plant Field Survey Form that incorporates both types of data.
- Analyze population trends by comparing recent size estimates to data from previous years.

Status: This monitoring report documents the second of three post-construction monitoring efforts associated with EO No. 30 along the former U-2414A project.

Status of terms and conditions from applicable NC Plant Conservation Program permits:
No applicable permits from the NC Plant Conservation Program have been applied for or been issued for this project.

Discretionary actions undertaken by NCDOT and partners:
No discretionary activities (i.e. rescue, relocation, augmentation or management) have been or are anticipated to be undertaken by NCDOT and its partners.

References

North Carolina Department of Transportation. 1995. Administrative Action Environmental Assessment for T.I.P. Project U-2414A, Catawba County, North Carolina. pg. 18.

North Carolina Department of Transportation. 2009. Biological Assessment for the Proposed Upgrade of Lovelady Road, TIP No. R-2824, in Burke County, North Carolina.

United States Fish and Wildlife Service. 1995. Service Concurrence: *Proposed Extension of Tate Boulevard, TIP No. U-2414, in Catawba County, North Carolina, and its Effects on the Federally Threatened Dwarf-Flowered Heartleaf.* Log Number 4-2-94-034.

United States Fish and Wildlife Service. 2009. Biological Opinion*: Proposed Upgrade of Lovelady Road, TIP No. R-2824, in Burke County, North Carolina, and Its Effects on the Federally Threatened Dwarf-Flowered Heartleaf.* Log Number 4-2-09-367.

Appendix A. Monitoring Data and Discussion

RK&K biologist Hal Bain and Pete Stafford conducted a survey on June 5, 2013. During the 2011 and 2013 surveys, plants were enumerated via a direct census count and the population boundary was GPS located and recorded. Figures 1 and 2 depict EO 30 as determined during the 2011 and the 2013 monitoring periods. The population boundary was re-delineated in 2013 and found no change from the 2011 boundary. Table 1 displays the results of the 2013 survey.

Table 1. *Hexastylis naniflara* (NHP EO 30) of former TIP No. U-2414A

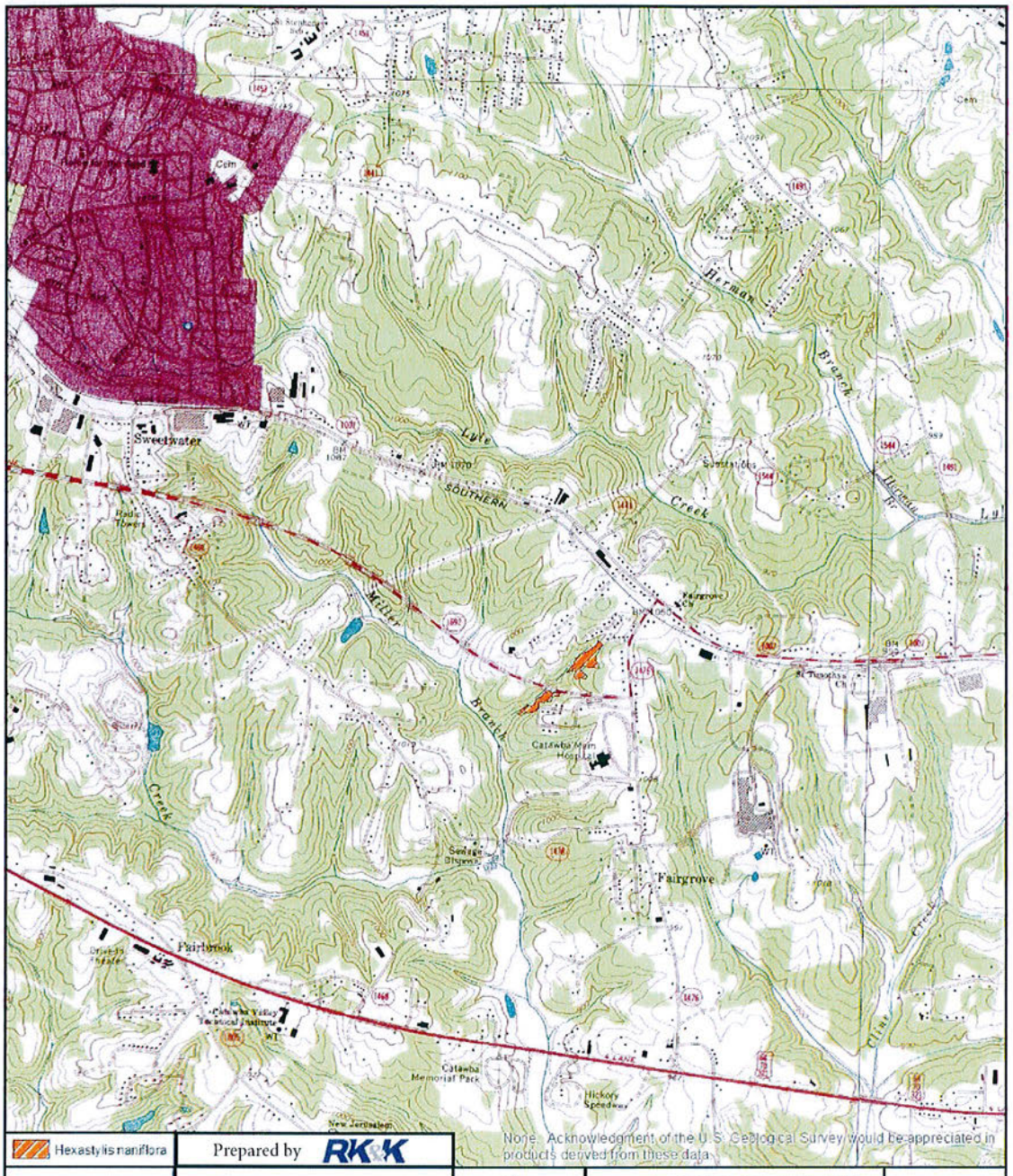
Location	1996/2001*	2011			2013		
	Plant #	Population Size (acre)	No. Plants	Density (plant/ac)	Population Size (acre)	No. Plants	Density (plant/ac)
North of Tate Blvd.	No Data	4.24	3,425	808	4.24	3,013	711
South of Tate Blvd.	No Data	2.36	1,607	681	2.36	1,706	723
Totals	**No Data**	**6.60**	**5,032**	**762**	**6.60**	**4,719**	**715**

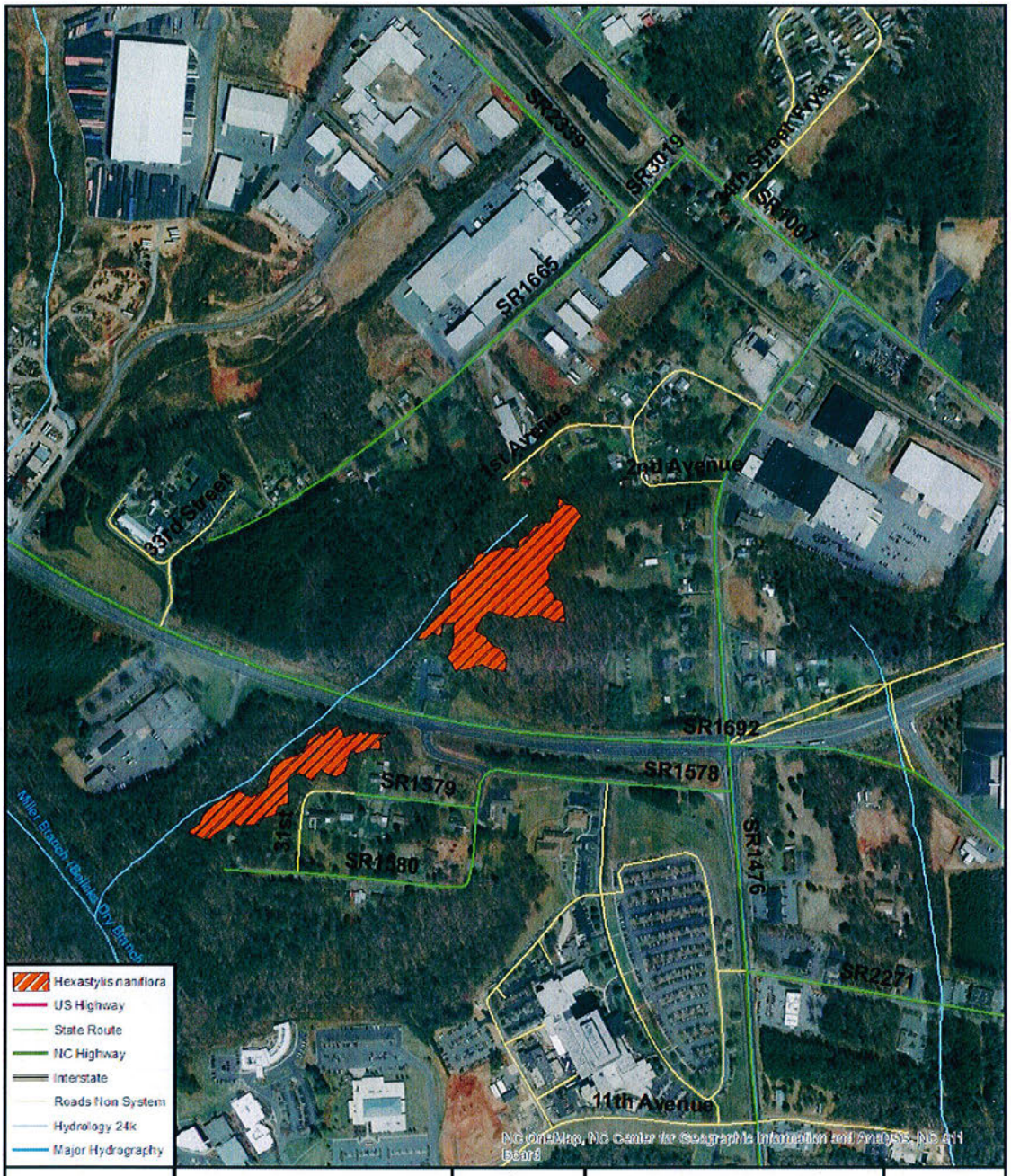
*These surveys were conducted using a presence/absence method and no individual species counts were recorded.

Beginning with the first monitoring phase in 2011, methods remain consistent to allow for better ability to track population trends in the future. The delineated plant area was unchanged from the 2011 survey.

The short term trend for this population (EO 30) is declining. The 2011 survey resulted in a population density of 762 plants per acre (5,032 total plants) and the 2013 survey resulted in a density of 715 plants per acre (4,719 total plants), representing a -6.3% decrease in total plant numbers. The cause of population decrease is not known, however, on the northern most end of the population north of Tate Blvd., invasive English ivy (*Hedera helix*), has infested the population that has probably resulted in some population mortality.

Appendix B. Figures





Prepared for NCDOT 6/29/15

Former U-2414A
Hexastylis naniflora (EO No. 30)
as determined during the
2013 monitoring period

0 0.0275 0.055 Miles

FIG 2

Appendix C. North Carolina Natural Heritage Program - Endangered And Rare Plant Field Survey Form
Return form to: N.C. Natural Heritage Program, 1601 MSC, Raleigh, NC 27699-1601. Visit www.ncnhp.org.

Species: *Hexastylis naniflora* **Common name**: Dwarf-flowered Heartleaf **Survey date**: 06/05/13

EO Number (if updating existing EO): 30 **County**: Catawba **7.5' Quad Map**: Hickory, NC

Coordinates: Population North of Tate Blvd. Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester, Population South of Tate Blvd Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester

If coordinates given, indicate coordinate system and datum (State Plane 1927 or 1983, UTM, etc): WGS (decimal degrees)

Elevation: Population North of Tate Blvd. 960'to 1000', Population South of Tate Blvd. 920'to 940'

Site Name (if this is within previously identified site): Former TIP No. U-2414A (Current TIP R-9999L)

Site location and directions: From exit 128 on I-40 in Conover, NC, turn right onto Fairgrove Church Rd and travel 0.9 mile to Tate Blvd. Turn left onto Tate Blvd. and travel 140 feet. Site EO will be on both sides of the road. (attach copy of map with site marked or use back of form to draw a sketch of the site): See attached Figures 1 and 2

Number of individuals: 4,719 (direct count) **Define individual** (stem, clump, etc.): rosettes and stems

Size of area in which population occurs: 6.6 acres

Estimate whether the entire population was surveyed, or only a portion: Entire

Estimated Population Viability (circle one): Excellent Good Fair Poor Unknown Failed to find
Population Viability Comments: Young plants and flowers observed during survey.

Phenology (include % or # in each stage): vegetative N/A bud N/A flower N/A

Evidence of reproduction: fruit N/A seedlings N/A clonal/vegetative N/A

Reproduction Comments: Young plants observed during survey.

Habitat (NC NHP natural community name and description, if known; include quality, soils, geology, etc.): Dry-Mesic Oak-Hickory Forest. Forest cover types are fairly similar both north and south of Tate Blvd. Delineated population boundary are located on Fairview clay loam and Clifford sandy loam soils. This EO consist of high quality habitat.

Associated species: The canopy is dominated by *Quercus alba*, *Q. rubra*, *Carya glabra*, *Acer rubrum*, *Liriodendron tulipifera*, and *Fagus grandifolia*. The understory consists of *Carpinus caroliniana*, *Oxydendrum arboretum*, *Acer rubrum, Cornus florida*, *Ilex opaca*. The shrub layer includes *Rhododendron* sp., *Rubus* sp., and *Euonymus americanus*. Woody vines included *Vitis rotundifolia*, *Smilax* sp., and *Toxicodendron radicans*. The herb layer is sparse to moderately dense and includes *Hexastylis naniflora*, *Goodyera pubescens*, *Polystichum acrostichoides*, and *Mitchella repens*.

Invasive species noted & degree of threat from invasive species: *Hedera helix* (moderate threat), *Lonicera japonica* (low threat), *Ligustrum sinense* (low threat), *Albizia julibrissin* (low threat)

Area of apparently suitable habitat (suitable for, but not necessarily occupied by the species): Approximately 8 acres along Miller Branch and an Unnamed Tributary of Miller Branch.

If the population is within a Right-of-Way, does suitable habitat exist outside Right-of-Way? Yes

Topographic position (examples: crest, mid slope, alluvial, etc.): Mid to bottom of slope

Moisture regime (examples: inundated, dry, seasonally wet, etc): Dry-mesic

Light (examples: open, woodland, closed canopy, etc): Woodland

Other information: Slope aspect is Northwest (NW)

Protection / management needs and opportunities: This occurrence could be evaluated for a conservation easement.

Landowner(s), if known: South of Tate Blvd. - Compass Group USA Inc.
North of Tate Blvd. – Howard L Pruitt Jr.

Person making this report, Address, & Phone: Pete Stafford, RK&K Consulting Engineers
900 Ridgefield Drive, Suite 350
Raleigh, North Carolina 27609-8524
919-878-9560

Prepared for: Tim Bassette, Biological Surveys Group
Natural Environment Section, NCDOT
1598 Mail Service Center, Raleigh, NC 27699-1598
919-707-6104.

Other observers: Hal Bain, RK&K

Specimens collected? None **Collection #**: N/A **Repository**: N/A
(permits are required for federal or state listed species)

Draw sketch below or attach map.

See attached Figures 1 and 2.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16512
EO Number 1

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Polkville

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Brushy Creek Bluff

Survey Site
Brushy Creek Bluff

Directions Broad River: Brushy Creek, Brushy Creek Bluff: On south side of creek, 3 miles south of Polkville, just south of junction of SR 1365 and SR 1363. North facing slope above Brushy Creek, east of bridge on Charles Eliot Road, 3 miles south of Polkville (Newberry 1995).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-04-04
EO Rank Comment
EO Data 100-200 plants seen in flower by Padgett on 04 April 2001 (Padgett 2001). 200 PLANTS PRESENT IN 1995 (Newberry 1995). About 200 plants over one acre, no seedlings, seed production average (Gaddy 1981). Specimen collected by Ahles and Bell on 19 April 1956 (Ahles & Bell 1956).

Source Feature Identifier 49054
Source Feature Locator Brushy Creek Bluff
Source Feature Descriptor 1956, Ahles and Bell

Surveyors L.L. Gaddy
Gill Newberry
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2001-04-04 **First Observation Date** 1956-04-19 **Last Observation Date** 2001-04-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments J. E. Padgett 2001, flower and leaf materials collected for reasearch at ASU. One of the discovery sites for the species.
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Trash and cattle on site (Newberry 1995). Bluff; canopy dominated by Quercus alba, Pinus echinata, Acer rubrum. Subcanopy dominated by Acer rubrum and Ilex opaca. Shrub layer dominated by Kalmia. Herb layer dominated by Lonicera japonica.
Min. Elevation 850 **feet** **Max. Elevation** 900 **feet**
EO Observed Area 1.00 **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments
Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16512

EO Number 1

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Specimen

HERB.NCSC (HERB.GA), HARDIN ET AL.

HERB.NCU 86889 & HERB.DUKE 166157, AHLES & BELL 11109, 19 APRIL 1956.

Old Source NEWBERRY, GILLIAN (USCS) 1995 (REPORT TO USFWS) L.L.GADDY, 1981 (STATUS OF HEXASTYLIS NANIFLORA IN NC, PCP CONTRACT).

VERSION

Version Author Robinson **Version Date** 2015-09-11

Transcribed By JLA **Transcription Date** 1991-03-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 7166

EO Number 2 **Parent EO Number** 98

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Indian Creek, Reeps Grove Church (Sub EO of EO 098).

Directions Indian Creek: Reeps Grove Church. This is a Sub EO of Parent 098 (Wichmann 2005). 1.2 miles west of Cat Square (Bell 1957). This site has evidently been destroyed. See Additional Topics for more discussion.

SURVEY INFORMATION

EO Rank X - Extirpated **EO Rank Date** 1980

EO Rank Comment Site has evidently been destroyed (1980).

EO Data
2001: Searched for site in 2001, but was unable to locate (Padgett 2005).
1981: Gaddy was unable to locate site in 1981 (Gaddy 1981).
1980: Searched for in 1980: Site evidently destroyed (Gaddy 1980).
1957: Herbarium collection (Bell 1957).

Source Feature Identifier 7166
Source Feature Locator 1.2 miles west of Cat Square
Source Feature Descriptor 1980; Gaddy

Surveyors L.L. Gaddy
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2001 **First Observation Date** 1957-04-28 **Last Observation Date** 1957-04-28

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: A 1957 herbarium specimen from Bell (NCU 176117) states it was collected from a location 1.2 miles west of Cat's Square. Gaddy (1981) was unable to find the species at this location in 1980 and 1981, and regarded it as possibly extirpated. Gaddy did re-locate the species 0.4 miles west of Cat Square (the presumed location of NCU 176118, mapped as NCHP sub EO 003). [C. Wells, 2006].

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 7166

EO Number 2 **Parent EO Number** 98

Management Comments

Protection Comments Extirpated.

Additional Topics

DOCUMENTATION

Reference Code	Citation
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Specimen

HERB.NCU 176117, C.R.BELL 6612, 28 APRIL 1957.

Old Source Gaddy, 1980, Status Survey Report.

VERSION

Version Author Amoroso **Version Date** 2015-10-09

Transcribed By ASW **Transcription Date** 1987-09-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13027

EO Number 3 **Parent EO Number** 98

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Cat Square Heartleaf Forest

Survey Site
South Fork Catawba River: Indian Creek, Cat Square Site (Sub EO of EO 098).
Bell's Cat Square Site (per Gaddy, 1981)
Cat Square Heartleaf Forest

Directions South Fork Catawba River, Indian Creek west of Cat Square. Gaddy (1981) named site "(Bell's) Cat Square Site" in his status survey for NC PCP/USFWS, in reference to one of Bell's two 1957 herbarium specimens from this area (NCU 176118), which Bell describes as "0.4 miles west from Cat's Square". Bell's second 1957 herbarium specimen (NCU 176117) states it was from a location 1.2 miles west of Cat's Square. Gaddy was unable to find the species in this second location (further west) in 1981, but did re-locate the species 0.4 miles west of Cat Square (the presumed location of NCU 176118). NCNHP sub EO 002 refers to specimen NCU 176117, sub EO 003 refers to NCU 176118. Both are sub EOs of Parent EO 98 [C. Wells, 2006].Rich deciduous forest and stream banks 0.4 mile west of Cat Square (Bell 1957).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 1995

EO Rank Comment

EO Data **2001:** Present, Matthews et al. observed scattered through site on 02 April 2001 (Matthews et al. 2002).
1995: 160 plants observed by Newberry in 1995. Population stable and with many large plants. Houses have been built near site (Newberry 1996).
1981: 50-60 clumps in less than 1 acre observed by Gaddy in 1981, seed production and seedling distribution average, population seems stable despite timber operation (Gaddy 1981).
1980: Observed by Gaddy in 1980 (Gaddy 1980).
1957: Bell collection (1957).

Source Feature Identifier 49068
Source Feature Locator South Fork Catawba River, Indian Creek west of Cat Square
Source Feature Descriptor 1996; Newberry

Surveyors J.T. Soule, HARP
L.R. Gaffney, HARP
D. Gillespie
Bell
L.L. Gaddy
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2001-04-02 **First Observation Date** 1957-04-28 **Last Observation Date** 2001-04-02

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Community type present is Mesic Mixed Hardwood Forest (Piedmont subtype). This site shows evidence of clear-cutting in the past. All of the trees seem to be even aged and are about the same size. The herb layer is sparse. It

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13027

EO Number 3 **Parent EO Number** 98

appears the this site has been left alone to recover from the logging activity. The canopy is dominated by Liriodendron tulipifera. (Matthews et al 2002). Boggy to mesic creekhead, with Liriodendron, Acer rubrum, Ilex opaca, Osmunda cinnamomea. Area was cut over about 1970 and is very dense.

Min. Elevation 1,000 **feet** **Max. Elevation** **feet**

EO Observed Area 1.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Sain & SAin Trucking Company	

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.

Specimen

HERB.NCU 176118, C.R.BELL 6640, 28 APRIL 1957.

Old Source L.L.GADDY, 1981, STATUS OF HEXASTYLIS NANIFLORA IN NC (PCP CONTRACT). HERB.NCU 176118, C.R.BELL 6640, 28 APRIL 1957 (DET. BLOMQUIST).

VERSION

Version Author Robinson **Version Date** 2015-11-17

Transcribed By ASW **Transcription Date** 1987-09-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 109

EO Number 4 **Parent EO Number** 98

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Cat Square Heartleaf Forest

Survey Site
South Fork Catawba River: Indian Creek, Sigmon Farm (sub EO of EO 098)
Sigmon Farm (per Gaddy, 1981)

Directions South Fork Catawba River: Indian Creek, Sigmon Farm. This is a Sub EO of Parent EO 098 (Wichmann 2005). Sigmon Farm: just north of Cat Square site, about 0.5 mile due west of Cat Square, about 0.2 mile north of SR 1113, along unnamed intermittent stream.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2001-04-02

EO Rank Comment

EO Data **2001:** Padgett estimated 200 plants on 2 April 2001 (Padgett 2001).
1995: 150 to 200 plants observed by Newberry in 1995. Population appears stable (Newberry 1996).
1981: About 100 plants over 400 sqm observed by Gaddy in October 1981, with excellent flower and seed production (Gaddy 1981).

Source Feature Identifier 49067
Source Feature Locator South Fork Catawba River: Indian Creek, Sigmon Farm
Source Feature Descriptor 1996; Newberry

Surveyors J.T. Soule, HARP
L.R. Gaffney, HARP
D. Gillespie, HARP
Gaddy
Newberry
Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2001-04-02 **First Observation Date** 1981-10 **Last Observation Date** 2001-04-02

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic mixed hardwood forest heavily impacted by selective and clear-cut timbering. Canopy species include Acer rubrum and Quercus alba, the subcanopy includes Cornus florida and Ilex opaca, shrubs include Euonumus americanus and Viurnum nudiflorum, Herbs include Goodyera pubescens, Stellaria media and Tipularia discolor. Creekhead and slopes. Plants are on well-drained, mesic slope.

Min. Elevation 1,000 **feet** **Max. Elevation** **feet**

EO Observed Area 1.00 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 109

EO Number 4 **Parent EO Number** 98

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments Ray Sigmon, Rt. 2 Box 468, Vale NC 28168.

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source Newberry, Gillian (USC-Spartanburg) 1995 (Report to USFWS) L.L.Gaddy, 1981, Status of Hexastylis naniflora In NC (PCP Contract).

VERSION

Version Author Robinson **Version Date** 2015-11-17

Transcribed By ASW **Transcription Date** 1987-09-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16347

EO Number 5 **Parent EO Number** 101

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Camp Creek Bluff

Survey Site
South Fork Catawba River: Jacob Fork, Camp Creek Bluff and Creekhead (Sub EO of EO 101).
Camp Creek Creekhead and Camp Creek Bluff (per Gaddy, 1981)

Directions South Fork Catawba River: Jacob Fork, Camp Creek Bluff, east and west sides of SR 1910. This is a sub EO of principal EO 101 (Wichmann 2005). Camp Creek Bluff-Camp Creek CreekheaD SITE. Both sites about 1 mile north of junction with SR 1924, just south of Camp Creek and along SR-1910. Camp Creek Creekhead Site is on east side of SR 1910 and Camp Creek Bluff Site is on west side of SR 1910.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-04-18

EO Rank Comment

EO Data **2002:** Padgett visited in April 2002. Plants were seen on both sides of SR 1910 estimated between 100-200 (Padgett 2002).
1995: Total of about 350 plants observed by Newberry in 1995: 150-200 plants at Bluff site (west of road) and 100-150 plants at Creekhead site (east of road) (Newberry 1996).
1989: Both sides of road posted, habitat intact, plants seen on west side of road along edge of wood margin, 6 May 1989 (LeGrand 1989).
1981: Total of 300-400 plants at both sites observed by Gaddy in May 1981: Bluff site (west side of SR-1910) had about 100 plants in 0.5 acre, and creekhead site (east side of SR-1910) had 200-300 plants in 1 acre (Gaddy 1981).

Source Feature Identifier 28476
Source Feature Locator Camp Creek Bluff
Source Feature Descriptor 2002; Padgett

Source Feature Identifier 28477
Source Feature Locator Camp Creek Creekhead
Source Feature Descriptor 2002; Padgett

Surveyors L.L. Gaddy
Harry LeGrand, NCNHP
James Padgett, ASU
Emily Gillespie, ASU
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2002-04-18 **First Observation Date** 1981-05 **Last Observation Date** 2002-04-18

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Site A: Creekhead (to east of road) is mesic, well-drained with middle-aged to mature canopy. Bluff (west of road) is mesic to xeric, well-drained. site B (EO 180): Bluff, with mature canopy of Quercus alba, Pinus strobus, Fagus; understory of Acer rubrum; shrub layer of Kalmia and Rhododendron maximum.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16347

EO Number 5 **Parent EO Number** 101

Min. Elevation 1,130 **feet** **Max. Elevation** 1,200 **feet**

EO Observed Area 1.50 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Site B has been split out as a separate sub EO (see EO 180) for better data organization; principal EO 101 represents both sub EO 005 and sub EO 180, in addition to sub EO 006 (Wichmann 2005). Subpop B was formerly EOR #007 (Russo 1995).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments Posted Sept. 5, 1988. Pansy Taylor, Lee Swink, Route 1, Box 181, Connelly Springs, NC.

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G02BUR01NCUS	Oakley, S.C. 2002. An Inventory of the Significant Natural Areas of Burke County, North Carolina.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F89NHP01NCUS	NCNHP Staff, 1989 Field Survey

Specimen

HERB.BOON 16377, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002

HERB.BOON 16380, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002

HERB.BOON 16399, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002

Old Source H. LeGrand, 6 May 1989 (NHP Survey). L.L.Gaddy, 1981 (Status of Hexastylis naniflora in NC, PCP Contract).

VERSION

Version Author Amoroso **Version Date** 2015-10-14

Transcribed By ASW **Transcription Date** 1989-01-18

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3600

EO Number 6 **Parent EO Number** 101

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Jacob Fork, Camp Creek North
Camp Creek North (per Gaddy, 1981)

Directions South Fork Catawba River: Jacob Fork, Camp Creek North at SR 1163. This is a sub EO of principal EO 101 (Wichmann 2005). Camp Creek North, ravine along south side of SR 1924 About 2000 feet north of Camp Creek Community.

SURVEY INFORMATION

EO Rank X - Extirpated **EO Rank Date** 1995

EO Rank Comment

EO Data **1995:** New home site observed in ravine by Newberry in 1995; no plants found. Whole area along Old NC-18 has many new home sites (Newberry 1995).
1981: About 200-300 plants in 40-100 square meter area; seed production average; population seemingly stable (Gaddy 1981).

Source Feature Identifier 49040
Source Feature Locator Camp Creek North
Source Feature Descriptor 1981; Gaddy

Surveyors L.L. Gaddy
Gillian Newberry

Survey Type Qualitative ground survey

Survey Date 1995 **First Observation Date** 1981-05 **Last Observation Date** 1981-05

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Ravine near head of Camp Creek's northern branch. a well-drained site, sandy loam soils. canopy of Acer rubrum, Liriodendron, Quercus alba, young to middle-aged.

Min. Elevation 1,200 **feet** **Max. Elevation** **feet**

EO Observed Area 1.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments

Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3600

EO Number 6 **Parent EO Number** 101

Protection Comments Extirpated

Additional Topics

DOCUMENTATION

Reference Code	Citation
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source L.L.Gaddy, 1981, Status of Hexastylis naniflora in NC (PCP Contract).

VERSION

Version Author Amoroso **Version Date** 2015-10-14

Transcribed By - **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 5089
EO Number 8

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
First Broad River: Knob Creek, Unnamed Tributary South of Zion Hill Church [Poundingmill Creek]
Poundingmill Creek (per Gaddy, 1981)

Directions First Broad River: Knob Creek, unnamed tributary south of Zion Hill church and east of SR 1552. Creekhead along east side of SR 1552, about 0.5 mile south of junction with SR 1555.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2000
EO Rank Comment
EO Data Padgett observed less than 20 plants scattered down slope to creek; few flowers, no seedlings seen during spring of 2001 and 2002 (Padgett 2005). Newberry observed 200-300 plants in ravine on east side of SR-1552 in 1996, just south of old home site. There was much trash in the upper portion of the population (Newberry 1996). LeGrand reported in 1989 that the site is still wooded (LeGrand 1989). LESS THAN 10 CLUMPS PRESENT OVER 16 SQM OBSERVED BY GADDY IN MAY 1981; NO SEED PRODUCTION NOTED; NO SEEDLINGS OF ANY AGE SEEN; FLOWERS AT THIS SITE WERE EXCEPTIONALLY SMALL (GADDY 1981).

Source Feature Identifier 28478
Source Feature Locator First Broad River: Knob Creek, unnamed tributary
Source Feature Descriptor 2002; Padgett

Surveyors L.L. Gaddy
Harry LeGrand, NCNHP
Padgett, ASU
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2002 **First Observation Date** 1981-05 **Last Observation Date** 2002
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments Leaf and flower materials collected in 2001 and 2002 for research by J. E. Padgett, Appalachian State University (Padgett 2005).
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Wooded slope leading to a small unnamed tributary of Knob Creek (Padgett 2005). CREEKHEAD WITH MATURE CANOPY OF ACER RUBRUM, LIRIODENDRON, NYSSA SYLVATICA.
Min. Elevation 1,140 **feet** **Max. Elevation** 1,210 **feet**
EO Observed Area 1.00 **acres**
Rep Accuracy Medium **Separation Comments** EO is located more than 2.0 kilometers from EOs: 005, 006, and 180 (Wichmann 2005). SITE IS LESS THAN 1.5 MILES FROM OTHER H. NANIFLORA LOCALITIES (005, 006, 007 [=EO 180]).
General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 5089

EO Number 8

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.

Old Source H.LEGRAND, 6 MAY 1989 (NHP SURVEY). L.L.GADDY, 1981 (STATUS OF HEXASTYLIS NANIFLORA IN NC, PCP CONTRACT).

VERSION

Version Author Robinson **Version Date** 2015-10-15

Transcribed By - **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 17372

EO Number 9 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hensons Creek Natural Area

Survey Site
Broad River: Hensons Creek Natural Area [Henson's Creek Ravine]
(Sub EO of 099)
Henson's Creek Ravine (per Gaddy, 1981)

Directions Broad River: Hensons Creek Natural Area, west of SR 1106 and south of the Broad River, at Hensons Creek Ravine. This is a sub EO of parent EO 099 (Wichmann 2005). Hensons Creek Ravine: Ravine and bluff located along west side of SR 1106 along Hensons Creek, for 0.5 mile above its confluence with Broad River.

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2005-03-05

EO Rank Comment

EO Data **2012:** Padgett visited the site and observed plants in 2012, however plants were not counted or estimated (Padgett 2015).
2005: Padgett estimated 500 plants estimated in the ravine on 05 March 2005 (Padgett 2005).
1995: Newberry estimated the population to be about 500-600 plants in 1995 (Newberry 1996).
1981: Over 1000 clumps over a 10 acre area; plants located within the ravine and on a bluff, but no plants were found along the creek (Gaddy, 1981). One of the largest known populations (Gaddy 1981).

Source Feature Identifier 28534
Source Feature Locator Broad River: Hensons Creek Natural Area
Source Feature Descriptor 2005; Padgett

Surveyors James Padgett, NHP
L.L. Gaddy
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2012 **First Observation Date** 1981 **Last Observation Date** 2005-03-05

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry Oak-Hickory Forest community in a moderately sloping ravine. Associated species include Quercus falcata, Quercus alba, Pinus echinata, Pinus virginiana, Oxydendrum arboreum, Cornus flordia, Polystichium acrostichoides, and Kalmia latifolia. Cut-over located to the west. (Padgett 2005). Ravine and bluff, with cut-over to mature canopy of Pinus echinata, Quercus alba, Liriodendron; Shrub layer of Kalmia.

Min. Elevation 722 **feet** **Max. Elevation** 880 **feet**

EO Observed Area 10.00 **acres**

Rep Accuracy High

Separation Comments Site visited in May of 2012 to try to ontain permission ot monitor it (Padgett 2015). -- All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 17372

EO Number 9 **Parent EO Number** 99

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Partnership (legal entity)	Keith Hawthorne	Belmont, NC. Hawthorne Ford. 1-800-721-8434
Partnership (legal entity)	Father-in-Law of Keith Hawthorne	

Owner Comments

Management Comments

Protection Comments Due to a change in ownership, no registry agreement is currently in place (Padgett 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Specimen

HERB.BOOM 15995, J E PADGETT APRIL 06, 2001
HERB.BOON 15997, J E PADGETT MAY 13, 2001
HERB.BOON 15998, J E PADGETT MAY 13, 2001
HERB.BOON 16388, J E PADGETT APRIL 20, 2002
HERB.BOON 16529, J E PADGETT MARCH AND APRIL 2001 (FLOWERS MOUNTED SHOWING RIDGES AND RETICULATIONS)
HERB.GWC 0641, J E PADGETT MAY 13, 2001
HERB.GWC 0642, J E PADGETT MAY 13, 2001

Old Source J.E. Padgett (ASU) 13 May 2001 (field survey, form). L.L.Gaddy, 1981, Status of Hexastylis naniflora in NC (PCP Contract). Verified by L.Mansberg, June 1985.

VERSION

Version Author Robinson **Version Date** 2016-01-12

Transcribed By **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 17373

EO Number 10 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Kudzu Farm Rare Plant Site

Survey Site
Broad River: Dills Creek, Kudzu Rare Plant Site (This is a sub EO of 099).
Kudzu Cow Farm (per Gaddy, 1981; in part)
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Dills Creek, Kudzu Farm Rare Plant Site: This is a sub EO of parent EO 099 (Wichmann 2005). In three suboccurrences: Suboccurrence A: SR 1122, about 0.8 road mile west of its intersection with SR 1111, along ravine draining into a tributary of Dills Creek; Suboccurrence B (former Subpopulation 1): Creekhead [east of triburary to Dills Creek], [located] approx 0.2 [air] mile south[southeast] of SR 1122, where road [SR 1112] crosses a small stream [tributary of Dills Creek], plants were found growing on banks of an eroded creek, hanging off the steep banks; Suboccurrence C: Ravine west of tributary to Dills Creek, located about 0.2 air mile southwest of SR 1122, from where SR 1112 cross a small tributary of Dills Creek (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2013-07-17

EO Rank Comment EO rank based on EO rank specs for this species and most current EO data (Wichmann 2005).

EO Data **All sites combined:** Padgett counted 3,094 plants within monitoring plots of Parent EO 99 on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area. Of the total, 388 plants were counted within the permant plot located at Sub EO 10 (Padgett 2014).
2013: Monitoring data is part of monitoring data for Principle EO 99 (Padgett 2013). 438 plants counted in monitoring plot at Sub EO 10 representing 10% of the population, by Padgett and Israel on 17 July 2013, for an estimate of 4000+ plants in the site.
2012: 186 plants were counted in permant plots by Padgett on 17 July 2012 after remapping and installing permant plot. Plant counts may have been low due ot the recent timber thinning and weedy growth (Padgett 2012).
2005: 500-750 plants estimated on May 2005 (Padgett 2005).
2001: Estimated 700 clumps plus single and double leaves present from the head of the stream to 120-150 yards downstream, plants in leaf and flower on 27 March (Padgett 2001).
1995: Gaddy's Cow Farm Site: 200-300 plants estimated at this site by Newberry in 1995 (Newberry 1996).
1981: About 200-300 plants growing on banks of eroding creek, hanging off steep banks; exceptionally vigorous, with 10-15 flowers on many plants, perhaps fertilized by cultivated field above site (Gaddy 1981).

Source Feature Identifier 68195
Source Feature Locator Kudzu Farm Rare Plant Site
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68199
Source Feature Locator Kudzu Farm Rare Plant Site, EO 10 plot
Source Feature Descriptor Padgett EO 10 plot

Surveyors L.L. Gaddy
James Padgett, ASU (2001), NHP (2005)
Gill Newberry
Kimberly Israel, NHP

Survey Type Qualitative ground survey

Survey Date 2014-05-20 **First Observation Date** 1981-05 **Last Observation Date** 2014-05-20

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 17373

EO Number 10 **Parent EO Number** 99

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description This forest community was cut along the ridgetop and thinned along the stream where the EO is located in 2011 (Padgett). -- Mid-aged Dry-Mesic Oak--Hickory Forest commmunity along stream and moderatley steep north-facing slope. Canopy is dominated by Quercus alba, Quercus coccinea, Liriodendron tulipifera, Acer rubrum and Fagus grandifolia. Other associated species include Aralia nudicalus, sanguinaria canadensis, Polystichium achrostichoides, Hexastylis arifolia variety arifolia, and Goodyear pubescens (Padgett 2005). Creekhead, middle-aged canopy of Quercus alba, Acer rubrum, Fagus grandifolia. Other associated species include Rhododendron nudiflorum, Sanguinaria canadensis, Polystichum acrostichoides and Lonicera japonica (Padgett 2001).

Min. Elevation 720 **feet** **Max. Elevation** 800 **feet**

EO Observed Area 4.00 **acres**

Rep Accuracy High

Separation Comments This EO is comprised of three sub-occurrences (source features) which are located within 0.5 Kilometers of one another and are within the boundaries of the Kudzu Farm Rare Plant Site; Sub EO 181 was formerly subpopulation 2 of EO 010 but has been separated out as a sub EO since it is not within the Boundaries of the Kudzu Farm Rare Plant Site; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	W. HENRY EDWARDS, 828-245-9752 - ROUTE 1, BOX 187, RUTHERFORDTON NC 28139.	2012, 2015 permission to survey granted by phone and in person

Owner Comments .

Management Comments

Protection Comments This EO has no formal protection, but the current owner is aware of the conservation value of this EO (Padgett 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 17373

EO Number 10 **Parent EO Number** 99

Specimen

HERB.BOON 15993, J E PADGETT APRIL 02, 2001

HERB.BOON 16530, J E PADGETT APRIL 2001 (MOUNTED FLOWERS SHOWING RIDGES AND RETICULATIONS)

HERB.GWC 0639, J E PADGETT APRIL 02, 2001

HERB.GWC 0643, J E PADGETT APRIL 02, 2001

Old Source J.E. PADGETT (ASU) 27 MARCH 2001 (FIELD SURVEY, FORM). L.L.GADDY, 1981, STATUS OF HEXASTYLIS NANIFLORA IN NC (PCP CONTRACT).

VERSION

Version Author	Amoroso	**Version Date**	2016-03-10
Transcribed By	JLA	**Transcription Date**	1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6117
EO Number 11

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Henry Fork, Pleasant Grove

Directions South Fork Catawba River: Henry Fork, tributary near Pleasant Grove. Approximately 4000 feet northwest of Pleasant Grove along a cool, well-drained, north-facing slope in the right-of-way on the south side of SR-1924 (Old NC-18).

SURVEY INFORMATION

EO Rank X - Extirpated **EO Rank Date** 1995
EO Rank Comment Site of house trailer; extirpated (Gillian Newberry 1995).
EO Data New house trailer in ravine; no plants could be located by Newberry in 1995 (Newberry 1996). ABOUT 10 PLANTS IN A SMALL UNDISTURBED AREA ALONG RIGHT-OF-WAY; NOT A HIGH-QUALITY SITE (GADDY 1981).

Source Feature Identifier 49030
Source Feature Locator Pleasant Grove
Source Feature Descriptor 1981; Gaddy

Surveyors L.L. Gaddy
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 1995 **First Observation Date** 1981-05 **Last Observation Date** 1981-05

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** Extirpated

DESCRIPTION

General Description Shallow ravine, an island of mature trees surrounded by disturbed areas; canopy of Tsuga canadensis, Pinus strobus, Liriodendron, with Rhododendron maxiumum.

Min. Elevation 1,300 **feet** **Max. Elevation** **feet**
EO Observed Area 1.00 **acres**

Rep Accuracy High

Separation Comments EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6117

EO Number 11

DOCUMENTATION

Reference Code	Citation
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source L.L.GADDY, 1981, STATUS OF HEXASTYLIS NANIFLORA IN NC (PCP CONTRACT).

VERSION

Version Author Robinson **Version Date** 2015-11-17

Transcribed By - **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10553

EO Number 12 **Parent EO Number** 243

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jacob Fork West Corridor

Survey Site
Catawba Wildlife Club, sub EO of EO 243

Directions Located to the south of Jacob Fork, north of Lynn Mountain Rd (SR 1108), and east of Wildlife Rd (SR 1109); primarily on Catawba Wildlife Club property. This is a sub EO of Parent EO 243 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 1995

EO Rank Comment One of the largest known populations (1981).

EO Data **2013:** Tried four times in May 2013 to get permission to visit site and did not get a return call or email (Padgett 2013).
2005: Gate locked, no data (Franklin et al. 2005).
1995: Over 1000 plants observed by Newberry in 1995 [count includes EO 242] (Newberry 1996).
1985: Verified by Moore (1985).
1981: Over 1000 plants in clearcut patches and mature mesic hardwood slope observed by Gaddy in May 1981; population very vigorous; seed production very good; many seedlings (Gaddy 1981).

Source Feature Identifier 49042
Source Feature Locator Catawba Wildlife Club
Source Feature Descriptor 1995; Newberry

Surveyors L.L. Gaddy
Julie Moore
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 1995 **First Observation Date** 1981-05 **Last Observation Date** 1995

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Mature to recently cut-over, with canopy of Quercus alba, Q. coccinea, Liriodendron, Acer rubrum. Well-drained mesic site.

Min. Elevation 1,000 **feet** **Max. Elevation** 1,050 **feet**

EO Observed Area 20.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Catawba County Wildlife Club Registered Heritage Area

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10553

EO Number 12 **Parent EO Number** 243

Owner Type	Owner Name	Notes
Private organization	Catawba County Wildlife Club	3571 Robinson Road, Newton, NC 28658
Private individual	Harry and Jo Ann Wilfong	3571 Robinson Road, Newton, NC 28658; (704) 462-2582

Owner Comments Wilbur Roney?(2002). Mr and Mrs. Wilfong were contacted in 2005 prior to site visit, a letter was sent with no response, M. Franklin called on the day of visit with no answer, call was returned days later (Wichmann and Franklin 2005). Correspondance with Catawba County Wildlife Club occurred in 2012, with permission to visit, but without follow-through on the Club's part to arrange access.

Management Comments

Protection Comments Registered Natural Area

Additional Topics

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
F85NHP01NCUS	NCNHP Staff, 1985 Field Survey.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

VERSION

Version Author Robinson **Version Date** 2016-03-23

Transcribed By - **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6668
EO Number 13 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Sandy Mush Outcrop

Survey Site
Broad River: Floyds Creek near Harris, Sandy Mush Rock Outcrop (sub EO of 247)

Directions Broad River: Floyds Creek near Harris, Sandy Mush Rock Outcrop: This is a sub EO of Parent EO 247 (Wichmann 2005). Located about 0.2 mile north of SR 2149, about 0.6 mile west of its junction with SR 2210, south of Sandy Mush Community.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05
EO Rank Comment
EO Data **2005:** Less than 100 plants seen along two small unnamed streams; less than 50 plants seen along one of the streams, recent ATV use in the area has trampled some plants (Padgett 2005). Fewer than 50 plants seen (Padgett 2001).
2000: Partial survey, area not throughly seached; 4 clumps observed by Kranyik on 25 March 2000 (Kranyik 2000).
1995: 75-100 plants estimated by Newberry in 1995 (Newberry 1996).
1981: 50-75 plants found in boggy areas along small stream and on slopes along eastern margin of outcrop; seed production excellent; good population of seedlings present (Gaddy 1981).

Source Feature Identifier 28924
Source Feature Locator Broad River: Floyds Creek near Harris, Sandy Mush Rock Outcrop
Source Feature Descriptor 2005; NCNHP

Source Feature Identifier 28925
Source Feature Locator Broad River: Floyds Creek near Harris, Sandy Mush Rock Outcrop
Source Feature Descriptor 2005; NCNHP

Surveyors Gaddy
James Padgett, NHP
Jay Kranyik
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2005-05 **First Observation Date** 1977 **Last Observation Date** 2005-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments James Padgett collected flower and leaf material collected in 2001 for pollen grain and genetic analysis (Padgett 2001).
Research Needs Comments
Additional Inventory Needed Y **Comments** Plants may occur along the streams, outside of the presently known EO locality (Padgett 2005).

DESCRIPTION

General Description Creekhead and small streams with Quercus alba, Acer rubrum, Liriodendron tulipifera, Vaccinium spp., Rhododendron, and Ceonanthus (Padgett 2005). Boggy creekhead, Quercus alba, Acer rubrum, Liriodendron, Vaccinium elliottii, Rhododendron nudiflorum, Osmunda cinnamomea.
Min. Elevation 840 **feet** **Max. Elevation** **feet**
EO Observed Area 1.00 **acres**
Rep Accuracy High **Separation Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6668

EO Number 13 **Parent EO Number** 247

General Comments: Most plants in association with Osmunda cinnamomea.

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	WILLIAM S. WOMACK	
Private individual	Rob Chapman	Proposed Rock Quarry (Padgett 2005).

Owner Comments Rob Chapman has worked with several aggregate companies to quarry the site if permits can be obtained (Padgett 2005).

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F00CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Specimen

HERB.UNCC 13134, MATTHEWS, MELLICHAMP, HOOD, HICKS, 6 JUNE 1977.

Old Source James Padgett, 2005, Inventory of the Natural Areas of Rutherford County. L.L.Gaddy, 1981, Status of Hexastylis naniflora in NC (PCP Contract).

VERSION

Version Author Amoroso **Version Date** 2015-10-22

Transcribed By **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18850

EO Number 14 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek & Grog Creek, Sub EO of EO 100).
NCDOT TIP: B-2119
NCDOT Broad River Mitigation Tract

Directions Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek and Grog Creek, north of SR 1195 and south of Middle Sandy Run Creek and Grog Creek. This is a sub EO of Principal EO 100 (Wichmann 2005). Middle Sandy Run Creek just southeast and southwest of its confluence with Grog Creek, north of SR 1195; population extends for approximately 700 meters (Wichmann 2005). North-facing bluff along Sandy Run Creek just northwest of SR 1195 bridge across creek.

SURVEY INFORMATION

EO Rank C? - Possibly fair estimated viability **EO Rank Date** 2001-04

EO Rank Comment

EO Data 2009: Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009).
2001: Large number of plants seen along steep slopes in April 2001 (Padgett pers. comm to Wichmann 2005).
2000: 177 plants total: 87 plants within project corridor and 90 plants outside of project corridor on 30 October 2000 (Bassette 2003).
1995: Newberry observed 20 plants in 1995 but noted that heavy tree fall had made the area hard to survey [east part of Newberry's occurrence overlaps EO 237] (Newberry 1996).
1981: Nearly 200 clumps total along steep slopes for this EO and EO 237; plants doing best around canopy openings; many seedlings seen, especially in light gaps (Gaddy 1981).

Source Feature Identifier 30220

Source Feature Locator Broad River/Sandy Run; Sub EO 014 of Principal EO 100

Source Feature Descriptor 1981; Gaddy

Surveyors James Padgett, ASU
L.L. Gaddy
Gill Newberry
Matt Jones, Garner-Webb University undergrad.

Survey Type Qualitative ground survey

Survey Date 2009-06 **First Observation Date** 1981-05 **Last Observation Date** 2009-06

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Individual plants not counted, estimates only (Wichmann per. com. with Padgett 2005).

DESCRIPTION

General Description In a mature hardwood forest, with scattered openings and tree falls, Carya sp., Quercus alba, Liriodendron, rich herb layer.

Min. Elevation 680 **feet** **Max. Elevation** 740 **feet**

EO Observed Area 5.00 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18850

EO Number 14 **Parent EO Number** 100

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Housler Tract	730 acre tract surveyed in 2001 with NCDOT (Padgett 2005)
State government	NC DOT	

Owner Comments

Management Comments

Protection Comments EO appears to fall outside of NC DOT Broad River Tract mitigation site boundary (Wichmann 2005).

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.

Specimen

HERB.BOON 15996, J E PADGETT APRIL 10, 2001

HERB.GWC 0640, J E PADGETT APRIL10, 2001

Old Source L.L.GADDY, 1981, STATUS OF H.N. IN NC (PCP CONTRACT).

VERSION

Version Author Robinson **Version Date** 2015-11-18

Transcribed By **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14047
EO Number 15

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Cherryville

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Mount Zion Heartleaf Forest

Survey Site
South Fork Catawba River: Indian Creek, Mill Creek, unnamed tributary at US 274
Mount Zion Heartleaf Forest

Directions Mount zion Heartleaf Site is located between Highway 274 and SR 1158 (Mount Zion Church Rd.) at the Gaston/Lincoln County line, in the southwest corner of Lincoln County. South Fork Catawba River: Indian Creek, Mill Creek, unnamed tributary at US 274: Three miles northwest of Cherryville, just inside Lincoln County, along US Highway 274 (Padgett 2005). "MOIST DECIDUOUS WOODS ON US 274, 3 MILES WEST OF CHERRYVILLE" (ROBINSON 1970).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2000-03-31
EO Rank Comment
EO Data Present on 31 March 2000 (Matthews et al 2002). "No signs of plant when surveying area in 1995" (Newberry 1996). Discovered by Robinson in 1970.

Source Feature Identifier 34655
Source Feature Locator Mount Zion Heartleaf Forest
Source Feature Descriptor 1970; Robinson

Surveyors L.R. Gaffney, HARP
J.T. Soule, HARP
James Padgett, ASU
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2000-03-31 **First Observation Date** 1970 **Last Observation Date** 2000-03-31
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak--Hickory Forest (Matthews et 2002).
Min. Elevation 860 **feet** **Max. Elevation** 900 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments: J. Padgett (2004) surveyed a nearby site and failed to find the species. This EO was previously ranked as X? based on his negative survey.

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Eaker	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14047

EO Number 15

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Specimen

HERB.ASU 5121, JOHN ROBINSON 177, 26 APRIL 1970.

HERB.UNCC J.T. Soule & L.R. Gaffney s n. 31 March 2000.

Old Source HERB.ASU 5121, JOHN ROBINSON 177, 26 APRIL 1970.

VERSION

Version Author Mason **Version Date** 2009-04-27

Transcribed By **Transcription Date** 1982-01-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 5682
EO Number 16 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek, Long Branch (Sub EO of EO 177)
NCDOT Transplant location
USFWS Flex Fund Monitoring Site 9 (in part)

Directions Broad River: Floyds Creek, Long Branch/US 221, ravine northeast of US 221, along a tributary located 0.4 mile north of where US 221 crosses over Long Branch. This is a sub EO of parent EO 177 (Wichmann 2005). Near Danieltown: In boggy area just east of US 221, 1.4 miles north of Danieltown. Population apparently destroyed by highway construction.

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2012
EO Rank Comment Found by Padgett in 2014Failed to find in 2012.EO rank based on rediscovery of plants near original site in 2004 by NC DOT
EO Data 2014: Padgett counted 246 plants within monitoring plots and estimated 5340 plants covering 5.21 acres of mapped area on 20 May 2014 (NCDOT 2015)2012: Failed to find by Padgett during 2012 status surveys (Padgett 2012).2004: Plants relocated near near original occurence along same stream corridor by NCDOT in 2004. Estimated population of 100-200 plants (Padgett 2014 - from personal site visit with NC DOT in 2004). --)No plants found, also searched nearby streams (Padgett 2001).1987: Population apparently destroyed by highway construction (Mansberg & Fridell 1987).

Source Feature Identifier 68202
Source Feature Locator Long Branch, south of Davenport Road/Mountain View
Source Feature Descriptor Padgett 2012

Surveyors James Padgett, ASU, NHP
Fridell
Masburg

Survey Type Qualitative ground survey

Survey Date 2014-05-20 **First Observation Date** 1977 **Last Observation Date** 2014-05-20
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 960 **feet** **Max. Elevation** **feet**
EO Observed Area 0.79 **acres**
Rep Accuracy High

Separation Comments Located near EO 164 but separated by US 221; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 5682

EO Number 16 **Parent EO Number** 177

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Sue Sparks, Family Real Estate LLC	Permission request letter sent 2012, no response
State government	NC DOT US74	

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F87NHP01NCUS	NCNHP Staff, 1987 Field Survey.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
F15DOT04NCUS	N.C. Department of Transportation Division 13. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory.

Old Source R.Currie, Listing Proposal Draft, 1987. Mansberg & Fridell, Site Visit, 1987.

VERSION

Version Author Robinson **Version Date** 2016-04-20

Transcribed By **Transcription Date** 1987-09-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 15583

EO Number 17 **Parent EO Number** 97

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Sandy Run Creek, N of SR 1003 (Sub EO of EO 097).

Directions Broad River: Sandy Run Creek, north of SR 1003. This is a Sub EO of Parent EO 097 (Wichmann 2005). Beside Sandy Run Creek, about 1 mile west of Boiling Springs (and SR 1158) and about 0.4 mile due north of SR 1003. On remnant bluff on south side of creek, beside transmission line corridor (Murrell & Kelly 1993).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 1995-1996

EO Rank Comment

EO Data **1996:** 50 plants observed by Newberry in 1995/1996 [year not reported] (Newberry 1996).
1993: 50 or fewer clumps seen in an area of about 10x20 meters by Murrell and Kelly on 04 April 1993, on a steep, north-facing remnant bluff (Murrell & Kelly 1993).

Source Feature Identifier 49055
Source Feature Locator Sandy Run Creek #1
Source Feature Descriptor 2014; Padgett

Surveyors Zack Murrell
A.W. Kelly
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 1995-1996 **First Observation Date** 1993-04-04 **Last Observation Date** 1995-1996

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Subpop 1: remnant bluff, with transmission line clearing at the top and high, steep creek bank at the bottom. Plant community is Mesic Mixed Hardwood Forest or Piedmont/Coastal Plain Heath Bluff. other species include Kalmia latifolia, Quercus sp., Carpinus, Halesia carolina, Amelanchier arborea, Xanthorhiza simplissima, Oxydendrum, Cornus florida, PInus virginicus, Heuchera americana, Carya cordiformis, Hepatica americana, ilex opaca, Epigaea repens, Polystichum, Mitchella repens, Leucothoe axillaris, anisostichus capreolata, Gelsemium sempervirens, Smilax glauca, Thalictrum thalictroides (Murrell & Kelly 1993).

Min. Elevation 700 **feet** **Max. Elevation** 720 **feet**

EO Observed Area 2.50 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Jim Matthews (UNCC) gave a verbal report that this species had been found in this vicinity by Tom Jones (Gardner-Webb). It is not clear whether this E.O. is the same site as the one Jones observed. Notes on the verbal report are included with this E.O. in the manual file.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 15583

EO Number 17 **Parent EO Number** 97

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	R. BEASON; OTHER PRIVATE	

Owner Comments

Management Comments It is unknown whether the powerline clearing allows a damaging amount of sunlight to reach the Hexastylis (Murrell and Kelly 1997).

Protection Comments Besides the powerline clearing at the top, extending across the creek from site is a wire, as though for sliding and jumping into the creek (Murrell and Kelly).

Additional Topics

DOCUMENTATION

Reference Code	Citation
F93CON01NCUS	Contributed. 1993. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

Old Source Z.E.Murrell & A.W.Kelly (NHP), 4 April 1993 (Survey, Form). Tom Jones (Gardner-Webb Univ.), 30 March 1993 (Pers. Comm. from Jim Matthews). S.Oakley, 25 April 2002, Site Survey Report: Sandy Run/Cliffside Natural Area.

VERSION

Version Author Amoroso **Version Date** 2015-10-08

Transcribed By JTF **Transcription Date** 2003-02-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6228
EO Number 18 **Parent EO Number** 97

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Sandy Run Creek, SW of SR 1164 (Sub EO of EO 097)

Directions Broad River: Sandy Run Creek, south west of SR 1164. This is a sub EO of Parent EO 097 (Wichmann 2005). On the southeast side of Sandy Run Creek about 1.5 miles northwest of Boiling Springs, on the southwest side of SR 1164 (Murrell & Kelly 1993). Also located on the next bluff south (second bluff south of SR-1164), on east side of Sandy Run Creek (Newberry 1996) [See Additional Topics for further discussion on this second site].

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-04-03
EO Rank Comment
EO Data **First bluff south of SR-1164:** Less than 50 plants on a steep north facing slope along the creek (Padgett 2001). 50-100 clumps estimated, growing on a very steep north- and northwest-facing bluff (Murrell & Kelly 1993)
Second bluff south of SR-1164: 50-100 plants observed by Newberry in 1995/1996 [year not reported](Newberry 1996).

Source Feature Identifier 30489
Source Feature Locator Broad River: Sandy Run Creek, south west of SR 1164 Murrell & Kelly (1993) location
Source Feature Descriptor 2001; NCNHP

Source Feature Identifier 49061
Source Feature Locator Broad River: Sandy Run Creek, south west of SR 1164 Newberry (1996): Sandy Run Creek #2
Source Feature Descriptor 1996; Newberry

Surveyors Murrell
Kelly
James Padgett, ASU
Gill Newberry

Survey Type Quantitative ground survey

Survey Date 2001-04-03 **First Observation Date** 1993-04-04 **Last Observation Date** 2001-04-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments J E Padgett collected flower and leaf materials in 2001 for research.
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Steep Heath Bluff with Kalmia latifolia, Galax ucreolata, and Polystichium acrostichoides present (Padgett 2001). -Very steep bluff with rock outcrops. Plant community is Piedmont/Coastal Plain Heath Bluff or Mesic Mixed Hardwood Forest. Other species include Kalmia latifolia, Symplocos tinctoria, Fagus, Amelanchier arborea, Galax aphylla, Oxydendrum, Cornus florida, Heuchera americana, Carpinus, Thalictrum Thalictroides, Polystichum, Mitchella repens, Leucothoe axillaris, Arisostichus capreolata, Gelsemium sempervirens, Quercus sp., Antennaria solitaria, Hepatica americana (Murrell & Kelly 1993).

Min. Elevation 720 **feet** **Max. Elevation** 780 **feet**
EO Observed Area 1.00 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6228

EO Number 18 **Parent EO Number** 97

Rep Accuracy High

Separation Comments Remapped areas along creek at the location of the second bluff to reflect the actual location of this occurence on the ground (Padgett 2014). - All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Newberry (1996) reports the exact same locality information as Murrell and Kelly (1993) and notes they discovered the occurrence in 1993 but she maps the occurrence one bluff south of where Murrell and Kelly (1993) show it on their map. Strangely, the coordinate Newberry (1996) reports (351648N 814055W) falls within the Murrell and Kelly (1993) site; however, the source of this coordinate is not reported - unclear if Newberry generated it during her survey. Padgett confirmed he located plants at the Murrell and Kelly (1993) site in 2002 and that its location has been correctly digitized (pers. comm. to S. Mason, 22 April 2009). Padgett will visit the location Newberry indicated on her map to survey for plants; for now both locations are mapped in the NHP database under this EO (Mason 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	Private	

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F93NHP01NCUS	NCNHP Staff, 1993 Field Survey

Old Source Z.E.Murrell & A.W.Kelly (NHP), 4 April 1993 Survey (Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-08

Transcribed By **Transcription Date** 1993-05-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13541

EO Number 19 **Parent EO Number** 252

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Henry Fork, Highway 70 Sites 1-3 (Sub of 252)
NCDOT TIP: R-2824
NCDOT TIP: R-0085 US 321 Bypass site id # 1, 2, and 3

Directions South Fork Catawba River: Henry Fork, small unnamed tributaries and US 321 (north), Sub of 252. 1 mile southwest of Mountain View School. 3 subpopulations [NC DOT Sites 1, 2 and 3] along unnamed tributaries to Henry Fork, east of SR 1008 and north of SR 1144.

SURVEY INFORMATION

EO Rank D? - Possibly poor estimated viability **EO Rank Date** 2007

EO Rank Comment Degraded habitat. Determine whether construction of Hwy 321 should downrank this EO (Franklin 2005).

EO Data **2014:** Gray reported in 2014 for that supop 1 was divided by US-321 construction and that it will be monitored in 2015; also, subpop 2 was extirpated due to construction; subpop 3 is extirpated at this site but plants from it were moved to Saranac Lake Preserve in SC in the 1990s (NCDOT 2014).
2007: 144 clusters observed at Site 1 by NCDOT in 2007 (NCDOT 2009).
1995/1996: Newberry reported the following conditons in 1995/1996: Site 1-- 100 plants remain north of the "new road" and none south of the road, site had 1000 plants prior to construction; Site 2-- no data reported; Site 3-- no plants remain, plants moved to Saranac Lake Presereve, SC and Site 4 (EO 020), site had 250-300 plants prior to construction (Newberry 1996). 20,000 plants [includes EO 020 (Wichmann 2005)] prior to NCDOT impact, unknown number impacted by US-321 Bypass (HDR personnel 2005). A total of 14,443 plants, scattered between EOs 19 and 20, were located in the construction project area (NCDOT 321) in 1995; more than 3,235 were expected to be impacted by improvement activities. Verification of the current situation is needed, including the number of plants protected on-site (Wells 2006).
1993: "Thousands of individuals seen at sites 1 through 3 [sub-populations A, B and C]" (Currie 1993).
Subpop A [site 1] =about 1000 plants (average 5.2 plants/100 sq ft) over 5.1 acres; Subpop B [site 2] =about 1000 plants (average 3.2/100 sq ft) over 3.7 acres; subpop C [site 3] =about 1000 plants (average 2/100 sq ft) over 3.7 acres; in leaf, flower & some fruit (Corda 1993).

Source Feature Identifier 49043
Source Feature Locator Site 3, Henry Fork, small unnamed tributaries and US 321 (north)
Source Feature Descriptor 1996; Newberry

Source Feature Identifier 49044
Source Feature Locator Site 2, Henry Fork, small unnamed tributaries and US 321 (north)
Source Feature Descriptor 1996; Newberry

Source Feature Identifier 49045
Source Feature Locator Site 1, Henry Fork, small unnamed tributaries and US 321 (north)
Source Feature Descriptor 1996; Newberry

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13541

EO Number 19 **Parent EO Number** 252

Surveyors Corda, NC DOT
HDR personnel
HARP personnel
Franklin
Wichmann
Gill Newberry
Jared Gray, NCDOT

Survey Type Qualitative ground survey

Survey Date 2007 **First Observation Date** 1993-08-06 **Last Observation Date** 2007

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Area Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester full of weedy species, much of the area has been planted in pines and the drainage is thick with Toxicodenron radicans, Rosa multiflora, Diphasiastrum digitatum [Lycopodium flabelliforme], etc. (Franklin and Wichmann 2005). "Relatively good condition" (Currie 1993). Subpop A [site 1]=mature beech stand with occasional white pine; partly disturbed from fallen trees (Hurricane Hugo); Dry, mid to lower slope, open. Subpop B [site2] =Area dominated by mixed hardwoods; dry, lower to upper slope, open/filtered light. Subpop C [site3] =cut-over mixed hardwood/pine-dominated canopy; shrub growth rank; steep slope; dry, lower to upper slope, open/filtered light (Corda 1993).

Min. Elevation 920 **feet** **Max. Elevation** 1,000 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments Within 2.0 kilometers of sub EO 020; EOs 019 and 20 were not separated by an area of persistently unsuitable habitat at the time of discovery and are therefore linked by principal EO 252 (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE?	

Owner Comments NCDOT is trying to purchase the property (NCDOT 2009).

Management Comments

Protection Comments EO seems to have been extirpated by construction of the 321 Bypass; no obvious quality habitat in the area (Wichmann 2005). "The Department of Transportation (DOT) will try to acquire in fee title additional righ-of-way at three of the five population sites [includes EO 020 (Wichmann 2005)] (approximately 1 acre at Site 1, 3 acres near Sites 2 and 3, and 1 acre at Site 4[EO 020]). A minimum of 1 site will be aquired within existing project right-of-way, If only one site is acquired on-site, the DOT, after consulting with the Service [FWS], will aquire at least one high quality Hexastylis naniflora site elsewhere in North Carolina (Currie 1993).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13541

EO Number 19 **Parent EO Number** 252

Additional Topics

Some plants protected in conservation easments outside of construction zones at site1(sub pop 1) and 4 (EO 020 sub pop A) (Wichmann Aug. 2005, per. comm. with J. Gray NC DOT). EO seems to have been extirpated due to construction of the 321 Bypass (Franklin and Wichmann May 2005). "EO 185 (Old EO 19/20) is a large population that was surveyed prior to the construction of the US 321 Bypass south of Hickory. It was a healthy population in three separate areas that consisted of approximately 20,000 *H. naniflora* plants. During field-checking, it was discovered that this site may have been significantly impacted. However, much of the site is on private property and separated by a new NCDOT ROW fence, which prevented access. According to old survey maps, it is possible that road construction for US 321 and private logging on some of the north-facing slopes have likely impacted the population. Because this site is such a large percentage of the known *H. naniflora* numbers, it is strongly recommended that NCDOT conduct a comprehensive survey to determine population viability" (HDR personnel, 2005). NC DOT should be consulted to determine whether this EO was impacted by construction of Highway 321 (Franklin 2005). "Approximately 20,000 plants [includes EO 020], unknown number impacted, some preserved in ROW (HDR personnel, 2005). "This project will directly impact 9.0 acres of the total 11.0 acres within the project corridor that contain Hexastylis naniflora [includes EO 020 (Wichmann 2005)]. Sites 3 [EO 019] and 5 [subpop B] will be completely eliminated. Other direct and indirect impacts from this project include disturbance from construction activities that may lead to increased erosion of downslope areas and degradation of Hexastylis naniflora habitat" (Currie 1993). Proposed construction of road project is planned over sites (Corda 1993).

DOCUMENTATION

Reference Code	Citation
U93CUR01NCUS	Currie, Robert R. 1993. Biological Opinion of the U.S. Fish and Wildlife Service concerning the effects of the construction of US 321 in Catawba County on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). 7pp.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
P05HAR01NCUS	Harris, P. S. III. 2005. Letter regarding Hexastylis naniflora Inventory NCDOT TIP No. R-2824. 2pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.

Old Source S.Corda (NCDOT), 6 August 1993 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-26

Transcribed By MJR **Transcription Date** 1994-05-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13542

EO Number 20 **Parent EO Number** 252

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Henry Fork, Large unnamed tributary and US 321 (Sub of 252)
NCDOT TIP: R-2824
NCDOT TIP: R-0085 US 321 Bypass site id # 4

Directions South Fork Catawba River: Henry Fork, 0.3 miles east of Zion Church; just west of US-321Bypass. This is a Sub EO of Parent EO 252 (Wichmann 2005). Subpopulation A (Site 4): located southwest of Propst Drive (no SR #) and just west of US 321 bypass; Subpopulation B (Site 5): extirpated (Wichmann 2005). 2 subpopulations [subpopulation A/site 4 and subpopulation B/site 5 (Wichmann 2005)] Along unnamed tributary to Henry Fork, northeast of SR 1008 and southeast of SR 1920 (Corda 1993).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2005-05-12

EO Rank Comment EO rank is based on EO rank specs for this species (WIchmann 2005).

EO Data **2007:** 296 clusters observed at Site 4 by NCDOT in 2007 (NCDOT 2009).
2005: Estimate approximately 250 plants, 150 counted on 12 May 2005 (Franklin et al. 2005). Only one subpopulation (subpopulation A/site 4) remaining after construction of US 321 Bypass (Wichmann 2005).
2005: Approximately 20,000 plants in 3 separate areas [includes sub EO 019 (Wichmann 2005)]; heathly population prior to construction of US 321 Bypass south of Hickory, during field-checking, it was discovered that this site may have been significantly impacted (HDR personnel, 2005).
1995/1996: Newberry reported the following conditons in 1995/1996: Site 4-- Building of the road destroyed about 100 plants of the original 200; 133 plants from site 3 planted here so total number of plants present is about 200; Site 5-- destroyed by construction of the road (Newberry 1996). A total of 14,443 plants, scattered between EOs 19 and 20, were located in the construction project area (NCDOT 321) in 1995; more than 3,235 were expected to be impacted by improvement activities. Verification of the current situation is needed, including the number of plants protected on-site (Wells 2006).
1993: Subpop A (site 4): "approximately 500 plants"; Subpop B (site 5): "12 plants" (Currie 1993). Subpop A [site 4]=about 500-1000 plants (average 12 plants/100 sqm) over 0.5 acre; Subpop B [site 5] =12 plants over 10-100 sqm; in leaf & flower (Corda 1993).

Source Feature Identifier 28250
Source Feature Locator Site 4, South Fork Catawba River: Henry Fork Henry Fork
Source Feature Descriptor 2007; NCDOT

Source Feature Identifier 49046
Source Feature Locator Site 5, Henry Fork
Source Feature Descriptor 1996; Newberry

Surveyors Corda, NC DOT
HDR personnel
HARP personnel
Franklin
Padgett
Wichmann
Gill Newberry

Survey Type Qualitative ground survey

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13542

EO Number 20 **Parent EO Number** 252

Survey Date 2007 **First Observation Date** 1993-08-06 **Last Observation Date** 2007

Data Sensitive Element N **Comments**

Monitoring Needs Comments This site will be monitored in 2015 by a NCDOT contractor to fullfill the 5-year monitoring requirement (NCDOT 2014).

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Fairly mature Dry-mesic Oak Hickory Forest dominated by Quercus alba and Oxydendron arboretum; sub-canopy dominated buy Cornus florida and Acer rubrum; understory dominated by Carya ssp., Fagus grandifolia, Vaccinium sp., and Quercus spp.; herbaceous layer dominated by Polygonatum biflorum and Rhododendron Af. pariclymenoides. Other species present include: Vaccinium pallidum, Punus serotina, Dioscorea villosa, Lespedeza sp, Quercus lyrata, Euonymus americana, Carya alba, Quercus phellos, Nyssa sylvatica, Vitis rotundifolia, Ilex opaca, Mitchella repens, Amelanchier (juveniles), Juniperus virginiana, Uvularia sessilifolia, Quercus velutina, Quercus falcata, Chionanthus virginicus, Uvularia perfoliata, Polystichum acrostichoides, Viola hastata, Thalictrum thalictroides, Aureolata laevigata, Gallium sp., Carpinus caroliniana, Scutellaria elliptica, Scuttelaria sp., Carex sp., Hustonia tenuifolia, Sanicula Af. canadensis, and Quercus stellata (Franklin et al. 2005). Subpop A(site 4): "in relatively good condition"; Subpop B (site 5): "consists of a high to-medium quality wetland area (Currie 1993).Subpop A [site 4] =adjacent to dry creek bed dominated by a mixed hardwood stand; disturbed from Hurricane Hugo blowdowns; shrub growth rank; dry, mid to lower slope, filtered light/shaded. Subpop B [site 5]=on northwest-facing slope adjacent to a floodplain.

Min. Elevation 880 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 1.50 **acres**

Rep Accuracy High

Separation Comments Within 2.0 kilometers of sub EO 019; EOs 019 and 20 were not separated by an area of persistently unsuitable habitat at the time of discovery and are therefore linked by Parent EO 252 (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE?	

Owner Comments NCDOT is trying to purchase the property (NCDOT 2009). DOT right-of-way and/or easment site??? (Franklin and Wichmann 2005).

Management Comments

Protection Comments May have been used as a mitigation site for US-321 Bypass, flags marking plants, NCDOT needs to be contacted for details regarding this EO (Franklin and Wichmann 2005). "The Department of Transportation (DOT) will try to acquire in fee title additional righ-of-way at three of the five population sites [includes EO 020 (Wichmann 2005)] (approximately 1 acre at Site 1, 3 acres near Sites 2 and 3, and 1 acre at Site 4[EO 020]). A minimum of 1 site will be aquired within existing project right-of-way, If only one site is acquired on-site, the DOT, after consulting with the Service [FWS], will aquire at least one high quality Hexastylis naniflora site elsewhere in North Carolina (Currie 1993).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13542

EO Number 20 **Parent EO Number** 252

Additional Topics Some plants protected in conservation easments outside of construction zones at site1(EO 019 sub pop 1) and 4 (sub pop A) (Wichmann Aug. 2005, per. comm. with J. Gray NC DOT)."EO 185 (Old EO 19/20) is a large population that was surveyed prior to the construction of the US 321 Bypass south of Hickory. It was a healthy population in three separate areas that consisted of approximately 20,000 *H. naniflora* plants. During field-checking, it was discovered that this site may have been significantly impacted. However, much of the site is on private property and separated by a new NCDOT ROW fence which prevented access. According to old survey maps, it is possible that road construction for US 321 and private logging on some of the north-facing slopes have likely impacted the population. Because this site is such a large percentage of the known *H. naniflora* numbers, it is strongly recommended that NCDOT conduct a comprehensive survey to determine population viability" (HDR personnel, 2005). "Approximately 20,000 plants [including EO 019], unknown number impacted, some preserved in ROW (HDR personnel, 2005). "This project will directly impact 9.0 acres of the total 11.0 acres within the project corridor that contain Hexastylis naniflora [includes EO 019 (Wichmann 2005)]. Sites 3 [EO 019] and 5 [subpop B] will be completely eliminated. Other direct and indirect impacts from this project include disturbance from construction activities that may lead to increased erosion of downslope areas and degradation of Hexastylis naniflora habitat" (Currie 1993). Proposed construction of road project is planned over sites (Corda 1993).

DOCUMENTATION

Reference Code	Citation
U93CUR01NCUS	Currie, Robert R. 1993. Biological Opinion of the U.S. Fish and Wildlife Service concerning the effects of the construction of US 321 in Catawba County on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). 7pp.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
P05HAR01NCUS	Harris, P. S. III. 2005. Letter regarding Hexastylis naniflora Inventory NCDOT TIP No. R-2824. 2pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.

Old Source S.Corda (NCDOT), 6 August 1993 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-26

Transcribed By MJR **Transcription Date** 1994-05-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8307

EO Number 21 **Parent EO Number** 295

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Hickory Area, Catawba River: Geitner Park, behind Boy Scout Building [Proposed Bike Path] (Sub EO of EO 295)

Directions Catawba River: Geitner Park, slope behind Boy Scout Building, Sub EO of EO 295. Along Catawba River northeast of US 321 crossing, about 2000 feet northwest of 12th Street Drive NW and 17th Avenue intersection behind Boy Scout building. EO is located "between the paved bike path and the Catawba River. Down a dirt trail behind a boarded up stone building...plants are on both sides of the path...EO extends along the slope to the south, along the river" (M. Franklin 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2005-05-11

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data
2005: 300+ counted, many more present; most flowering (M. Franklin and Wichmann 2005).
1996: Trail passes through population but the disturbance is slight (Newberry 1996).
1995: 200-250 plants observed by Newberry in 1995.
1994: 50-100 plants in leaf & flower on 12 April (Todd & Savidge 1994).

Source Feature Identifier 28456
Source Feature Locator EO 021. Geitner Park
Source Feature Descriptor 2005; NCNHP

Surveyors Misty (Franklin) Buchanan, NCNHP
Brenda Wichmann, NCNHP
Todd
Gill Newberry
Savidge

Survey Type Qualitative ground survey

Survey Date 2005-05-11 **First Observation Date** 1994-04-12 **Last Observation Date** 2005-05-11

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Community seems to fit a Pine-Oak Heath, but slightly sheltered -- not as Xeric; perhaps it better fits a Low Mountain White Pine Forest; Canopy dominated by Pinus storbus, very large Pinus spp., and Quercus prinus; understory dominated by Halesia sp., Kalmia carolina, and Oxydendrum arboreum; Also present: Juniperus virginiana, Pinus strobus saplings, Acer rubrum, Hammemalis virginica, Eonymus americanus, Carya spp., Quercus spp. (including Q. alba, Q. velutina, Q. phellos), Castanea dentata (seedling), and Symplocos tinctoria; herbaceous layer includes: Chimophila maculata, Mitchella repens, Danthonia sp., Vitis rotundifolia, Maianthemum racemosum, Galax urceolata, Polysichium acrosticoides, Goodyera pubescens, Vaccinum Af. pallidum, Lonicera sempervirens, Sanguinaria canadensis, Dichanthelium sp., and Hedera helix (1 small clump, pulled up) (M. Franklin and Wichmann 2005). Sloping hardwood canopy; moist, filtered light/shaded with Goodyera pubescens.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8307

EO Number 21 **Parent EO Number** 295

Min. Elevation 1,060 **feet** **Max. Elevation** 1,100 **feet**

EO Observed Area 2.10 **acres**

Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas Catawba County Open Space

Owner Type	Owner Name	Notes

Owner Comments "park is jurisdiction of Hickory Parks and Recreation. Mr. McCloud is the director...(B. Rayfield 2005).

Management Comments

Protection Comments Bicyle path present, appears not to have impacted EO however, foot traffic through EO may have increased as a result of bicyle path (M. Franklin and Wichmann 2005). Proposed bicycle path with consultation pending with USFWS (1994).

Additional Topics EO associated with NC DOT project site (bike path), plants impacted (if any) unknown, see U05HDR01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U06MOY03NCUS	Moye, William S. 2006. Highly Ranked Plants of the South Mountain Region. Unpublished notes sent via email to Misty Franklin in February 2006.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source P.Todd & T.Savidge (NCDOT), 12 April 1994 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-26

Transcribed By MJR **Transcription Date** 1994-06-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 385
EO Number 23

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville West

County Name
Polk (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Mill Creek Forest and Seep

Survey Site
Mill Creek Forest and Seep
USFWS Flex Fund Monitoring Site 4

Directions Mill Creek Forest and Seep. Approximately 0.7 mi east of the community of Kross Keys, north of NC 9 and east of SR 1338, along an unnamed tributary to Mill Creek (Robinson 2015).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2015-05-29
EO Rank Comment EO rank based on EO rank specs for the species (Wichmann 2005).
EO Data **2016:** 212 plants counted by Bloom on 13 May 2016. Estimated 1459 plants covering the entire remapped 1.39 acres (Bloom 2016).
2015: 211 plants counted by Padgett on 19 May 2015 in 0.14 acres of monitoring plots. Estimated 1700 total plants covering the entire 1.17 acres (Padgett 2015).
2014: Padgett counted 213 plants in permanent monitoring plots on 19 May 2014 and estimated a total of 1780 plants over 1.17 acres (Padgett 2014).
2013: Padgett counted 211 plants in permanent monitoring plots on 16 July 2013 and estimated a total of 1763 plants over 1.17 acres (Padgett 2013).
2012: 208 plants counted in 0.14-acre sample plot in 2012. Estimate of 1738 plants total. (Padgett 2012). This site was revisited by James Padgett and Laura Gadd (NHP) and remapped in June 2012.
900 counted, probably at least 1,000 plants (Franklin and Padgett 2005). 150-200 plants observed by Newberry in 1995 or 1996 (Newberry 1996). Stovall and Murdock disovered this occurrence in 1992 or 1993 (reported in Newberry 1996).

Source Feature Identifier 68191
Source Feature Locator Mill Creek Forest and Seep
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68192
Source Feature Locator Mill Creek Forest and Seep, EO 23 plot
Source Feature Descriptor Padgett EO 23 plot

Source Feature Identifier 89884
Source Feature Locator Mill Creek Forest and Seep
Source Feature Descriptor Bloom 2016

Surveyors Nora Murdock, USFWS
Misty (Franklin) Buchanan, NCNHP
Brenda Wichmann, NCNHP
James Padgett, NCNHP
Doug Rayner, Wofford College
Stovall
Gill Newberry
James Padgett, NHP 2013
Sean Bloom, Catawba Land Conservancy
Laura Gadd, NHP

Survey Type Qualitative ground survey

Survey Date 2016-05-13 **First Observation Date** 1992-1993 **Last Observation Date** 2016-05-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 385

EO Number 23

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description LOW ELEVATION SEEP (PIEDMONT/MOUNTAIN SPRINGHEAD SUBTYPE – Canopy is primarily Acer rubrum and Liriodendron tulipifera, but also includes Nyssa sylvatica and Fraxinus pennsylvanica. The sub canopy is primarily Acer rubrum, Ilex opaca, Carpinus caroliniana, and saplings of Fraxinus pennsylvanica and Fagus grandiflora. The shrub layer is predominately Viburnum nudum var. nudum, Vaccinium corymbosum, Rhododendron periclymenoides, Lindera benzoin, and Calycanthus floridus. Other shrubs found throughout are Amelanchier arborea and Itea virginica. Much of the shrub layer is bound up with Smilax laurifolia and less often with Smilax rotundifolia, Muscadinia rotundifolia, and Parthenocissus quinquefolia. The ground and many of the trees are covered with vines of Decumaria barbara. The herbaceous layer is dominated by Parathelypteris noveboracensis, Osmundastrum cinnamomeum, Osmunda spectabilis, and Lorinseria areolate. The herbaceous layer also includes Polystichum acrostichoides, Viola sororia, Arundinaria gigantea, Arisaema triphyllum, Medeola virginiana, Mitchella repens, and Microstegium vimineum. There were also a number of Trillium rugelii found in fruit.(Bloom 2016)
Nice Piedmont Boggy Streamhead (?) with Pinus virginiana, Quercus alba, Liriodendron tulipifera, Ilex opaca, Nyssa sylvatica, Carex lurida, C. intumescens var. intumescens, C. atlantica, C. debilis, Polystichum acrostichoides, Xanthorhiza simplicissima, Mitchella repens, Thelypteris noveboracensis, Fagus grandiflora, Vaccinum corymbosum, Ilex opaca, Microstegium vimineum, Rhododendron Af. periclymenoides, Toxicodendron radicans, Platanus occidentalis, Viola sororia [V. papilionaceae], Calycanthus floridus, Sassafrass albidum, Uvularia perfoliata, and Vitis rotundifolia (Franklin et al. 2005). Piedmont bog, shrubby, near cow pasture, cows have access to site, logging has recently occurred (1993).

Min. Elevation 820 **feet** **Max. Elevation** 919 **feet**

EO Observed Area 1.17 **acres**

Rep Accuracy High

Separation Comments Within 2.0 kilometers of EO 160 but not part of a principal-sub relationship due to topography and persistently unsuitable in between the 2 EOs (Wichmann 2005).

General Comments: A small amount of Microstegium vimineum found in the seep and only a few stems of Lonicera japonica were observed. Threat: Low / Scope: Low / Immediacy: Low (Bloom 2016).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	David Cantrell, 205 Kenwood Drive, Shelby, NC 28150	2012 permission granted, 2016 reminder postcard mailed

Owner Comments

Management Comments

Protection Comments Horse pasture has been fenced but perhaps extends into wetland (Franklin 2005).

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 385

EO Number 23

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

Old Source Nora Murdock (USFWS) & Marilyn Stovall, 1992-1993? (Field Survey, Pers.Comm.).

VERSION

Version Author Amoroso **Version Date** 2016-06-07

Transcribed By MJR **Transcription Date** 1994-08-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 626
EO Number 25

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Longview

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hildebran/Henry River Slopes

Survey Site
South Fork Catawba River: Henry Fork Hildebran/Henry River Slopes

Directions South Fork Catawba River: Henry Fork Hildebran/Henry River Slopes: ALONG NORTH SIDE OF HENRY FORK, EAST OF HENRY RIVER. A DIRT ROAD LEADS DOWN FROM THE YODER HOUSE TO A NARROW FIELD BY HENRY FORK. THE NEXT RAVINE UPSTREAM FEATURES A THIN BROOK BELOW STEEP BANKS.

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 1985-03-01
EO Rank Comment ID not confirmed (Wichmann 2005). UPSLOPE WOODS SHOW EVIDENCE OF PAST (RECENT?) LOGGING & PERHAPS STORM DAMAGE, BUT IMMEDIATE HABITAT NOT AFFECTED (1985).
EO Data PERHAPS 20 (OR MORE?) IN PRE-ANTHESIS & ANTHESIS IN MARCH 1985 (MOYE 1994).

Source Feature Identifier 626
Source Feature Locator South Fork Catawba River: Henry Fork Hildebran/Henry River Slopes
Source Feature Descriptor 1985; Moye

Surveyors Moye **Survey Type** Quantitative ground survey
Survey Date 1985-03 **First Observation Date** 1985-03 **Last Observation Date** 1985-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Confimation of ID needed; EO discovered in March (pre-anthesis) (Wichmann 2005).

DESCRIPTION

General Description PERHAPS DRY-MESIC OAK-HICKORY FOREST; NORTHWEST-FACING, 45-50 DEGREE, LOWER SLOPE, FILTERED TO DEEPLY SHADED, MESIC, WITH DOMINANTS QUERCUS ALBA, Q.RUBRA, KALMIA LATIFOLIA, HEPATICA AMERICANA, EPIGAEA REPENS (MOYE 1994).
Min. Elevation 960 **feet** **Max. Elevation** 1,000 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments MS. YODER
Management Comments
Protection Comments TIMBER HARVEST SEEMS LIKELY, ESP. IF LAND PASSES TO NEW OWNER (MOYE 1994).
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 626

EO Number 25

DOCUMENTATION

Reference Code	Citation
U94MOY01NCUS	Moye, W.S. 1994. Inventory of the South Mountains, North Carolina. Conservation Trust for North Carolina, Raleigh, NC. NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.

Old Source W.S. MOYE, MARCH 1985 (FIELD SURVEY, REPORT).

VERSION

Version Author Wichmann **Version Date** 2005-12-02

Transcribed By MJR **Transcription Date** 1995-09-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 19217
EO Number 27

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Henry Fork, Prospect Ridge

Directions South Fork Catawba River: Henry Fork, Prospect Ridge. PROSPECT RIDGE: ABOUT A 10- TO 15-MINUTE WALK DOWNHILL FROM THE BALLPARK BEHIND LAUREL CREEK CHURCH. THE PLANTS OCCUPY THE LOWER SLOPES SOUTH AND SOUTHWEST OF THE CHURCH AND SOUTH AND EAST OF THE CLEARCUT (MOYE 1994).

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 1991-04-01
EO Rank Comment No data, ID not confirmed (2005).
EO Data Present with H. minor; difficult to separate, scattered over lower third to half of hillside; seen Spring 1987, 1990, 1991 (MOYE 1994).

Source Feature Identifier 19216
Source Feature Locator South Fork Catawba River: Henry Fork, Prospect Ridge
Source Feature Descriptor 1987; Moye

Surveyors Bill Moye **Survey Type** Qualitative ground survey
Survey Date 1991-Spring **First Observation Date** 1987-Spring **Last Observation Date** 1991-Spring
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Confirmation of ID needed; identification of this EO has been questioned by James Padgett, No response received from landowner when contactect by Franklin for 2005 site visit (Wichmann 2005).

DESCRIPTION

General Description Low hillside with remarkable diversity with xeric habitats above, mesic ones below, and low elevation seeps near margins of narrow waterway through valley. Dry-mesic oak-hickory forest transitional to wetter creekside habitats. Mesic west- and southwest-facing slopes to nearly flat lower slopes, filtered to shaded light. Dominants are Pinus strobus, Quercus, Acer rubrum, Oxydenrum arboreum, Nyssa sylvatica, Ilex opaca, Kalmia latifolia, Vaccinium pallidum, Vitis rotundifolia, Smilax. High diveristy of herbs (See report) (Moye 1994).
Min. Elevation 1,220 **feet** **Max. Elevation** 1,260 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments Property owner contacted prior to 2005 site visit, no response, no visit (Franklin and Wichmann 2005).
Management Comments Some past human disturbances (road, Vinca minor), but in better shape that much of surrounding area which was clearcut (1994).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 19217

EO Number 27

Protection Comments Floral diverstiy and proximity to xeric pine-oak heath forests, white pine forests, and low elevation seeps warrant some protection (1994).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U94MOY01NCUS	Moye, W.S. 1994. Inventory of the South Mountains, North Carolina. Conservation Trust for North Carolina, Raleigh, NC. NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.

Old Source W.S. MOYE, SPRING 1987, 1990, 1991 (SOUTH MOUNTAINS REPORT).

VERSION

Version Author Robinson **Version Date** 2015-10-27

Transcribed By MJR **Transcription Date** 1995-10-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 643
EO Number 28 **Parent EO Number** 216

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Buffalo Creek Rare Plant Site

Survey Site
Buffalo Creek: Friendship Chapel and Long Creek [Cleveland County Landfill] (Sub EO of EO 216).
Special Protection Environmental Area within the Cleveland County Landfill on Airport Road

Directions Buffalo Creek: Friendship Chapel, northeast bank of Long Creek located north-east of Friendship Chapel and in the southern portion of the Buffalo Creek Rare Plant Site; Clevland County Landfill. This is a sub EO of Parent EO 216 (Wichmann 2005). Cleveland County Landfill, east side of Long Creek on the north and west facing slopes of a prominent ridgeline (Huysman 1996).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2016-03-08
EO Rank Comment

EO Data **2016:** An estimated 250 clumps were observed in two stream bluff areas totalling an estimated 1.25 acres on 3 August 2016. Plants and habitat appear in good condition (Tuttle 2016).
2005: 300 to 400 estimated plants along slopes and flats along or near Long Creek. Observed by Padgett on 12 January 2005. Plants are viable and healthy (Padgett 2005).
1996: 250 to 300 plants multiple aged, stable and prolifically flowering (Newberry 1996).

Source Feature Identifier 26148
Source Feature Locator Buffalo Creek: Friendship Chapel and Long Creek [Cleveland County Landfill] (Sub EO of EO 216).
Source Feature Descriptor 1996-05-03; Newberry

Source Feature Identifier 90153
Source Feature Locator Special Protection Environmental Area within the Cleveland County Landfill
Source Feature Descriptor 2016; Tuttle

Surveyors Newberry
James Padgett, NHP
Julie Tuttle

Survey Type Qualitative ground survey

Survey Date 2016-08-03 **First Observation Date** 1996-05-03 **Last Observation Date** 2016-08-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Moist, moderately steep slopes adjacent to Long Creek and an intermittent drainage area that drains into Long Creek. Canopy dominated by Quercus alba and Liriodendron tulipifera with other oak, hickory, and hardwood species also present in the canopy, subcanopy, and shrub layers. Habitat quality is good, although these two stream bluff areas seem small and fairly isolated within the surrounding landfill property. (Tuttle 2016).
Mesic Mixed Hardwood Forest. with Fagus grandifolia, Ilex opaca, Prunus serotina, Vaccinium spp., Polystichum acrostichoides, Tipularia discolor, Cornus florida, Vitus spp, Smilax spp, Carpinus caroliniana, Lonicera japonica, Pinus taeda, Mitchella repens, Chimaphila masculata, Juniperus virginiana, Acer rubrum, Quercus rubra, Lyquidambar

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 643

EO Number 28 **Parent EO Number** 216

styraciflua, Liriodendron tulipifera, Pinus virginiana, Quercus alba (Huysman 1996). The slope above the creek contains a very diverse collection of spring ephemerals (Newberry 1996).

Min. Elevation 780 **feet** **Max. Elevation** 820 **feet**

EO Observed Area 4.29 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. The landfill isolates this site from possible unknown populations and habitat found upstream along Buffalo Creek as well as possible sites and habitats upstream along Long Creek (Padgett 2005).

General Comments: Invasive species present include Microstegium vimineum, Pueraria lobata, and Ligustrum sinense. These are not abundant on the bluff areas or where H. naniflora occurs, but they are abundant or dominant in areas adjacent to the species' habitat or elsewhere on the landfill property. Area of suitable habitat may include the larger area mapped previously for this EO. This survey confirmed the northern streamside boundary of the population and suitable habitat; at this northern streamside boundary is a small, grassy roadcut to the stream, and Microstegium vimineum overwhelmingly dominates the herbaceous layer in the forest north of this roadcut. (Tuttle 2016)

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Local government	CLEVELAND COUNTY	

Owner Comments Contact at the Cleveland County Landfill is Sam Lockridge, 704-447-8204. (Tuttle 2016).

Management Comments Recommendation of border species by G. Newberry should be considered (Padgett 2005). --G. Newberry recommends planting a protective border of trees such as locust, pine, or red maple on the upslope edge adjacent to the landfill to protect the slope from runoff and edge species such as Lonicera or kudzu.

Protection Comments The area has been designated as Special Protected Environmental Area by Cleveland County.

Additional Topics Geology : CZbg - Biotite gneiss and schist- Inequigranular, locally abundant potassic feldspar and garnet; interlayered and gradational with calc-silicate rock, sillimanite-mica schist, mica schist, and amphibolite. Contains small masses of granitic rock

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.

Specimen

HERB.USCS NEWBERRY & HUYSMAN 11965, 3 MAY 1996.

Old Source Chris Huysman (S & EC) 1996 (Wetlands Assesment and Endangered Species Survey for Cleveland County Landfill Expansion - East Site). Gillian NewberrY (USC-Spartanburg) 3 May 1996 (Field survey, letter to S & EC)

VERSION

Version Author Amoroso **Version Date** 2016-08-19

Transcribed By JLA **Transcription Date** 1997-04-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14504
EO Number 29

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Island Creek Heath Bluff

Survey Site
Catawba River: Island Creek Heath Bluff, Lovelady 3-8
NCDOT TIP: R-2824
USFWS Flex Fund Monitoring Site 10

Directions Catawba River: Island Creek, Island Creek Heath Bluff, NC DOT Lovelady sites 3-8. About 2 miles north of Connelly Springs, between Tomlinson Loop (SR 1613) and SR 1001, along route of proposed Lovelady Road (SR 1546) extension.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-05-24
EO Rank Comment
EO Data **2016:** Bloom counted 1472 plants in 1.79 acres of monitoring plots on 24 May 2016, and estimated 50,000+ plants occuring in the entire 62 acres of mapped area (Bloom 2016).
2014: Padgett counted 1718 plants within monitoring plots on 25 June 2014 and estimated 58,000+ plants covering 65 acres of mapped area (Padgett 2014).
2013: Padgett and Israel counted 1715 within monitoring plots on 18 July 2013 and estimated 17,000+ plants covering 18-acre population area, and 61,000+ plants for 65-acre mapped area (Padgett 2013).
2012: 1015 plants counted in 1.8-acre sample plot in 2012. Estimate of 10,150 plants for 18-acre population area. (Padgett 2012).
2006: Population apparently doing very well (plants not counted) on 28 April 2006, observed by Franklin and Moye (Franklin 2006).
2005: An approximate total of 98,789 individuals were calculated, at 6 sub-populations, using 1/100 acre sampling plots. Plants at site 8 were directly counted. Surveys made in October and November 2004; confirmation of species made in April 2005 by Matthews (HDR 2005, Bassette 2009) [this is likely an over-estimate resulting from a calculation of density per acre (Wichmann and Padgett 2005)].
2002: 800-1200 plants in flower on 5-8-2002 (Padgett 2002).
1995: More than 1000 plants counted on lower to upper slopes in an area 1-2 miles long (Savidge 1996).

Source Feature Identifier 68187
Source Feature Locator north of Island Creek Heath Bluff
Source Feature Descriptor Padget 2012

Source Feature Identifier 68188
Source Feature Locator north of Island Creek Heath Bluff, EO 29 plots
Source Feature Descriptor Padgett EO 29 plots

Source Feature Identifier 68507
Source Feature Locator Island Creek Heath Bluff
Source Feature Descriptor Padget 2012

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14504

EO Number 29

Surveyors Misty Franklin, NCNHP
William S. Moye
Savidge, NC DOT
James Padgett, ASU
HDR personnel
HARP personnel
James Padgett, NHP, 2013
Sean Bloom, CLC
Jim Matthews, HARP

Survey Type Qualitative ground survey

Survey Date 2016-05-24 **First Observation Date** 1995-03-21 **Last Observation Date** 2016-05-24

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** NC DOT personnel have conducted detailed surveys (Wichmann 2005).

DESCRIPTION

General Description Population intermixed with Hexastylis heterophylla (Franklin 2006). Mixed pine and hardwood forest, associated species include: American beech, sourwood, umbrella magnolia, American holly, white pine, white oak, Christmas fern, grape, honeysuckle, cranefly orchid, smilax, mountain laurel, hemlock (Tsuga canadensis), partridge berry, galax, yellow poplar, red maple, dogwood, black oak, black cherry, mockernut hickory, strawberry bush, rattlesnake plantain (Goodyera repens), scarlet oak (Q. coccinea), persimmon (Diospyros virginiana), northern red oak, sassafras, mountain silverbell (Halesia carolina), chestnut oak, Virginia pine, black gum (Nyssa sylvatica), red cedar, and shortleaf pine, rhododendron, fringe tree (Chionanthus virginicus), strawberry bush, horse sugar (Symplocos tinctoria), and buffalo nut (Pyrularia pubera), ground pine (Lycopodium obscurum), running-pine, skullcap (Scutellaria spp.), broomsedge (Andropogon virginicus), devil's bit, and trailing arbutus (Epigaea repens) (HDR 2005). --Forest and large cutover areas with Kalmia latifolia, Galax aphylla, Chimaphila maculata, Quercus alba, Pinus strobus, Oxydendron arboreum.

Min. Elevation 1,040 **feet** **Max. Elevation** 1,200 **feet**

EO Observed Area 49.00 **acres**

Rep Accuracy High

Separation Comments Principal EO 178 is approximately 1.5 air kilometers from principal EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore considered independent principal EOs (Wichmann and Franklin 2005).

General Comments: Identification confirmed by Gillian Newberry (USC-Spartanburg)

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Alan and Janice Jacks, Rutherford College/Caldwell County	2012 and 2016 granted permission to survey

Owner Comments

Management Comments

Protection Comments

Additional Topics EO associated with NC DOT project R-2824, impacts by NCDOT listed as N/A, see U05HDR01NCUS (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14504

EO Number 29

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

Old Source Tim Savidge (NC DOT) 13 February 1996 (Field Form)

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By JLA **Transcription Date** 1997-04-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14501
EO Number 30 **Parent EO Number** 179

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (Sub of 179).
NCDOT TIP: U-2414A Tate Blvd SE
NCDOT TIP: R-2824

Directions South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital. Unnamed tributary to Miller Branch, near SR 1572 & 1476. This is a sub EO of Parent EO 179 (Wichmann 2003). 0.4 km west of intersection of Tate Boulevard (SR 1692) and Fairgrove Church Road (SR 1476) on north and south sides of Tate Boulevard.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2001-10
EO Rank Comment
EO Data **2013:** 4719 plants counted in 6.6 acres on 5 June 2013 (Stafford 2013).
2011: A total of 5032 plants were counted over 6.6 acres on 3 November and 12-13 December 2011; 3425 in 4.24 acres north of Tate Blvd and 1607 in 2.36 acres south of Tate Blvd (Gregory 2011)
2001: Field review by NCDOT on October 2001: population along the south side of Tate Boulevard intact and may have slightly expanded outside of the originally delineated boundaries, populations along the north side of Tate Boulevard appeared to have been slightly impacted along the parking lot of a newly constructed building. Few DFHL [Hexastylis naniflora] existed along the north side of Tate Boulevard before the building was constructed (Bassette 2003).
1996: Between 50 and 500 plants present. Identification verified by G. Newberry (Savidge & Bain 1996).

Source Feature Identifier 28170
Source Feature Locator South Fork Catawba River: Clark Creek, Miller Branch
Source Feature Descriptor 2002; Padgett

Source Feature Identifier 29587
Source Feature Locator South Fork Catawba River: Clark Creek, Miller Branch
Source Feature Descriptor 1995; NCDOT

Surveyors Tim Savidge, NC DOT
Hal Bain
James Padgett, ASU
Emily Gillespie, ASU
Pete Stafford, RK&K Consulting Engineers
Cheryl Gregory, NCDOT

Survey Type Qualitative ground survey

Survey Date 2013-06-05 **First Observation Date** 1995-03-22 **Last Observation Date** 2013-06-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** "[NC DOT]project construction is ongoing and records for this population are insufficient for field verification at this time...it is recommended that a follow-up survey is conducted at the project location to determine actual impacts after construction is completed" (HDR personnel, 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14501

EO Number 30 **Parent EO Number** 179

DESCRIPTION

General Description High quality Dry-Mesic Oak-Hickory Forest occurring both north and south of Tate Boulevard. The canopy is dominated by Quercus alba, Q. rubra, Carya glabra, Acer ruburm, Liriodendron tulipifera, and Fagus grandifolia. The understory consists of Carpinus caroliniana, Oxydendron arboreum, Acer rubrum, Cornus florida, Ilex opaca. The shrub layer includes Rhododendron sp., Rubus sp., and Euonymus americanus. Woody vines inlcude Vitis rotundifolia, Smilax sp., and Toxicodendron radicans. The herb layer is sparse to modeately dense and includes Hexastylis naniflora, Goodyera pubescens, Polystichum acrostichoides, and Mitchella repens. (Stafford 2013).
North facing slope, plants located about mid-slope grading to small creek draining to Miller Branch. Associated species inlcude Kalmia latifolia, Goodyera pubescens, Chimaphila maculata, Quercus alba, and Pinus strobus.

Min. Elevation 940 **feet** **Max. Elevation** 1,000 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: The following invasive species were noted as low threast: Lonicera japonica, Ligustrum sinense, and Albizia julibrissin. Hedera helix was noted as a moderate threat. (Stafford 2013)

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments In NCDOT ROW?

Management Comments

Protection Comments

Additional Topics NCDOT implemented avoidance/minimization for U-2414A and reduced the road from four-lane divided to five lanes, which resulted in the construction limits remaining outside of the forested areas where H. naniflora was known to exist (NCDOT 2014).
"U-2307 (EO 179 [sub EO 30]) was expected to have significant impacts on a large population of *H. naniflora* in Catawba County. It was expected that a population of 10,700 plants would be lessened by 5,400 as a direct result of the realignment of multi-lane road. Project construction is ongoing and records for this population are insufficient for field verification at this time. While this population loss was mitigated by the purchase of 25 acres at Murray's Mill, it is recommended that a follow-up survey is conducted at the project location to determine actual impacts after construction is completed" (HDR personnel, 2005).
"U-2414A .. may affect all or portions of...[EO 030]...Results of the NCDOT's October 2001 field review revealed that the DFHL [Hexastylis naniflora] population along the south side of Tate Boulevard is intact and may have slightly expanded outside of the originally delineated boundaries. However, DFHL [Hexastylis naniflora] populations along the north side of Tate Boulevard appeared to have been slightly impacted along the parking lot of a newly constructed Home Builders Association building. Note that few DFHL [Hexastylis naniflora] existed along the north side of Tate Boulevard before the building was constructed" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14501

EO Number 30 **Parent EO Number** 179

Specimen

HERB.BOON 16379, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002

HERB.USC T. SAVIDGE S.N. 22 MARCH 1995

Old Source Tim Savidge (NC DOT) and Hal Bain 13 February 1996 (Field Survey, Form)

VERSION

Version Author	Amoroso	**Version Date**	2016-06-27
Transcribed By	JLA	**Transcription Date**	1997-09-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20023
EO Number 31

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Clark Creek, tributary near Fairbrook
NCDOT TIP: R-2824
NCDOT TIP: U-2307C I-40/Startown Road Interchange

Directions South Fork Catawba River: Clark Creek, tributary near Fairbrook. Between Interstate 40 and US 70 near Fairbrook.

SURVEY INFORMATION

EO Rank C? - Possibly fair estimated viability **EO Rank Date** 2001-10
EO Rank Comment EO rank is based on EO Rank Specs for this species and available EO data (Wichmann 2005).
EO Data 2010: 1202 total plants counted on 20 and 21 December 2010: 423 plants counted at the 15th avenue site, 522 plants at the 1.54 acres SW1 site, and 25 plants at the 0.05 acre NW site on 20 December. 232 plants counted on 21 December at the 0.37 acre SW2 site (M. Haney 2015).
2001: A total of 10,700 plants were located in the construction project area (DOT TIP: U-2307C) in 2001; 5,400 were expected to be impacted by improvement activities. Verification of the current situation is needed, including the number of plants protected on-site (Wells 2006).
2005: NCDOT construction nearby, impacts needs to be determined (HDR personnel 2005).
2003: Small fragments of the original population on a steep hill near [NCDOT] project and along project's right-of-way limits, these fragments are unlikely to be impacted from future development due to their loction (Bassette 2003).
2001: A large number of plants seen when visited in 2001 (Padgett 2001).
1996: Over 1000 plants (Savidge 1996).

Source Feature Identifier 20022
Source Feature Locator Original 15th ave site, South Fork Catawba River: Clark Creek, tributary near Fairbrook.
Source Feature Descriptor 1996; Savidge

Source Feature Identifier 90008
Source Feature Locator SW 15th Ave Site, South Fork Catawba River: Clark Creek, tributary near Fairbrook.
Source Feature Descriptor 2010 December 20; NCDOT

Source Feature Identifier 90009
Source Feature Locator 15th Ave Site, South Fork Catawba River: Clark Creek, tributary near Fairbrook.
Source Feature Descriptor 2010 December 20; NCDOT

Source Feature Identifier 90010
Source Feature Locator NW 15th Ave Site, South Fork Catawba River: Clark Creek, tributary near Fairbrook.
Source Feature Descriptor 2010 December 20; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation Personnel
Savidge, NC DOT
James Padgett, ASU
HDR personnel
HARP personnel
Matt Haney, NCDOT

Survey Type Qualitative ground survey

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20023

EO Number 31

Survey Date 2010-12-21 **First Observation Date** 1995-05-04 **Last Observation Date** 2010-12-21

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** "...it is recommended that a follow-up survey is conducted...to determine actual impacts after construction is completed" (HDR personnel, 2005).

DESCRIPTION

General Description SW1, SW2, and NW sites consists of medium quality Mesic Mixed Hardwood Forest (Piedmont subtype). Associated species include Platanus occidentalis, Quercus rubra, Quercus falcata, Quercus coccinea, Liriodendron tulipifera, Liquidambar styraciflua, Acer rubrum, Botrychium virginianum, Tipularia discolor, Asplenium platyneuron, Polystichum acrostichoides, Oxydendrum arboretum, Carya tomentosa, Prunus serotina, Pinus strobus, Pinus virginiana, Smilax sp., Cornus florida, Toxicodendron radicans, Nyssa sylvatica, Fagus grandifolia, Rubus sp., Quercus alba, Euonymus americanus, Quercus stellata, Vitis rotundifolia, Arundinaria gigantean, Juniperus virginiana, Lycopodium digitatum, Chimaphila maculata and Ilex opaca (Haney 2015).

15th Ave site consists of medium quality Mesic Mixed Hardwood Forest (Piedmont subtype) which includes Kalmia latifolia, Fagus grandifolia, Cornus florida, Quercus rubra, Juniperus virginiana, Carpinus caroliniana, Carya tomentosa, Ilex opaca, Oxydendrum arboreum, Polystichum acrostichoides, Asplenium platyneuron, Quercus alba, Pinus virginiana, Tipularia discolor, Smilax sp., Euonymus americanus, Liquidambar styraciflua, Liriodendron tulipifera, Quercus coccinea, Acer rubrum, Quercus falcata, Nyssa sylvatica, Prunus serotina, Chimaphila maculata, Goodyera pubescens and Pinus strobus (Haney 2015). Steep hill and along right-of-way (Bassette 2003).

Min. Elevation 940 **feet** **Max. Elevation** 970 **feet**

EO Observed Area **acres**

Rep Accuracy Medium **Separation Comments** More than 2.0 Kilometers southwest of EO 277 and separated by a major highway and no suitable habitat (Robinson 2015).

General Comments: Medium threat noted from Lonicera japonica at SW2. Moderately low risk from Lonicera japonica and Ligustrum sinense at SW1 and NW sites. Low degree of threat from Rosa multiflora, Ligustrum sinense, and Lonicera japonica at the 15th avenue site. (Haney 2015)

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	NCDOT OR PRIVATE	
US Department of Transpor		

Owner Comments

Management Comments

Protection Comments

Additional Topics "U-2307 ([Principal] EO 173 [sub EO 31]) was expected to have significant impacts on a large population of *H. naniflora* in Catawba County. It was expected that a population of 10,700 plants would be lessened by 5,400 as a direct result of the realignment of multi-lane road. Project construction is ongoing and records for this population are insufficient for field verification at this time. While this population loss was mitigated by the purchase of 25 acres at Murray's Mill, it is recommended that a follow-up survey is conducted at the project location to determine actual impacts after construction is completed" (HDR personnel, 2005). "U-2307C... was completed in December 1997...permits authorized impacts to the entire DFHL [Hexastlyis naniflora] population. The project affected all or portions of...[EO] 031...Upon reviewing the site, it was determined that the project's...population was not completly destroyed. Part of the...population situated outside of the project's righ-of-way has now been impacted by apparent clearing activities. Small fragments of the original DFHLpopulation currently exist ib a steep hill near the project as well as along the project's right-of-way limits. These small fragments are unlikely to be impacted from future development due to their locations (Bassette 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20023

EO Number 31

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G15DOT03NCUS	Haney, Matt. 2010 Hexastylis naniflora (Dwarf-Flowered Heartleaf) Extension of 15th Avenue, S.E. (Former TIP U-2307C, Element Occurrence No. 31) Inventory and Monitoring Report Catawba County, North Carolina. NCDOT, Raleigh, NC.

Old Source TIM SAVIDGE (NC DOT) 13 FEBRUARY 1996 (FIELD SURVEY, FORM).

VERSION

Version Author Amoroso **Version Date** 2015-10-13

Transcribed By JLA **Transcription Date** 1997-09-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14983
EO Number 32

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Longview

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per ag **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Henry Fork tributary south of Longview
NCDOT TIP: R-2824
NCDOT TIP: U-2528AA I-40/SR 1124 Interchange

Directions South Fork Catawba River: Henry Fork tributary south of Longview. SOUTH OF LONGVIEW ALONG A TRIBUTARY TO HENRY FORK AT PROPOSED INTERCHANGE AT INTERSTATE-40 AND SR 1124 (33rd Street).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2011-03-03
EO Rank Comment EO rank is based on EO Rank Specs for this species; downgraded from an AB to a D based on EO data from Spring 2005 (Wichmann 2005).
EO Data 2013: 234 plants counted in 2.3 acres on 6 June 2013 (Stafford for NCDOT 2013).
2011: 60 observed by NCDOT on 03 March 2011 in their ROW; the remainder of the occurrence [number of plants not reported] was noted to be outside of the ROW (NCDOT 2014).
2007: 42 plants observed by NCDOT on 22 March 2007 in the right-of-way. Overpass construction removed some trees, altering the habitat (NCDOT 2009).
2005: More than 1,000 plants are within construction project area (DOT TIP: U-2528AA); 619 plants are expected to be impacted by construction activites in 2005. However, 250 plants were reported to be protected on-site, but only 1 plant was found during 2005. Verification of the situation is needed, including the number of plants protected on-site (Wells 2006). 1 plant found during field checks, 250 plant are thought to be preserved in additonal ROW purchased at this site (HDR personnel 2005).
2003: Impacted by NCDOT project U-23907C and/or private landowner, portion of EO still present, portion of EO are gone (Bassette 2003).
1995: Over 1000 plants observed by Savidge on 21 March 1995 (SAVIDGE 1996).

Source Feature Identifier 14982
Source Feature Locator Henry Fork tributary south of Longview
Source Feature Descriptor 1995-03-21; Savidge

Surveyors Tim Savidge, NC DOT
HDR personnel
HARP personnel
Pete Stafford, RK&K
Hal Bain, RK&K

Survey Type Qualitative ground survey

Survey Date 2013-06-06 **First Observation Date** 1995-03-21 **Last Observation Date** 2013-06-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Additional inventory needed to confirm the 250 plants thought to be preserved in ROW purchased at this site by NCDOT; GPS/GIS data clearly mapping the occurrence and ROW would be beneficial (Wichmann 2005).

DESCRIPTION

General Description Medium quality Dry-Mesic Oak-Hickory Forest with a canopy dominated by Pinus taeda, Quercus alba, Q. rubra, Carya glabra, Acer rubrum, Liriodendron tulipifera, and Fagus grandifolia. The understory consists of Juniperus virginiana,

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14983

EO Number 32

Pinus taeda, Carpinus caroliniana, Oxydendron arboreus, Acer rubrum, Cornus florida, Ilex opaca. The shrub layer includes Rhododendron sp., and Rubus sp. Woody vines include Vitis rotundifolia, Smilax sp., and Toxicodendron radicans. The herb layer is sparse to moderately dense and includes Hexastylis naniflora, Goodyera pubescens, and Tipularia discolor. (Stafford for NCDOT 2013). NC DOT right-of-way (HDR personnel 2005). NORTH-FACING SLOPE GRADING TO SMALL STREAM (SAVIDGE 1996).

Min. Elevation 1,090 **feet** **Max. Elevation** 1,100 **feet**

EO Observed Area **acres**

Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments: Invasive species present include Lonicera japonica, Ligustrum sinense, Albizia julibrissin. (Stafford 2013).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	NCDOT	

Owner Comments

Management Comments

Protection Comments

Additional Topics This project was subject to consultation with USFWS (ASNC log no. 4-2-95-102), and a Biological Opinion was written in 1995 for impacts relating to NCDOT's road work. The ammended BO anticipated direct impacts to 619 plants, but the Service anticipated that the site would ultimately be lost through indirect impacts. Murray's Mill was purchased as off-site mitigation. [C.Wells, 8/2006]. "U-2528AA (EO 32) involves a new highway interchange where impacts to approximately 619 plants were anticipated. A portion of the mitigation was provided for this site through the Murray's Mill purchase and conservation of 25 acres of a *H. naniflora* population. During the recent field visit, it was discovered that much of the surrounding habitat had been disturbed through logging operations and/or project impacts. While only one plant was found during field checks, 250 plants are thought to be preserved in additional ROW purchased at this site" (HDR personnel 2005). "U-252AA...Construction completed June 2003.. may have affected all or portions of [EO] 032...Results of the October 2001 survey indicate that the only DFHL impacts on this project occurred as a result of direct construction activities...indirect impacts were not observed, it is anticipated that such impacts could eventually occur from development along the interchange. Based on October 24, 2002 conversation with Trish Simon, the plants in Quad D (SE quadrant) are still present and a protective fence has been placed around them. NCDOT did not disturb Quad A (NE quadrant) according to road project's permits and plans, but the property owner has since cleared the area for future development. The plants in Quadrant A (NE quad) are now gone. Quad B (NW quadrant) was already stressed before construction was started due to logging and these plants are gone. The population on other side of the original on-ramp had been cleared by the landowner for future development" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14983

EO Number 32

Specimen

HERB.USC SAVIDGE S.N. 21 MARCH 1995

Old Source TIM SAVIDGE (NC DOT) 13 FEBRUARY 1996 (FIELD SURVEY, FORM).

VERSION

Version Author	Robinson	**Version Date**	2015-10-26
Transcribed By	JLA	**Transcription Date**	1997-09-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18888
EO Number 33

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Morganton North

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Catawba River: Tributary to Rhodhiss Lake, John's River Waste Management Facility.

Directions Catawba River: Tributary to Rhodhiss Lake, John's River Waste Management Facility. John's River Waste Management Facility. The northern subpopulation is located along Long Creek and the southern population is next to a sediment basin.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 1996-05-03
EO Rank Comment
EO Data Huysman and Newberry observed a total of approximately 275 plants in two subpopulations: approximately 200 plants located in the northern portion of the facility and another 75 plants in the southern portion of the facility adjacent to a sediment basin near an old cemetery on 05 May 1996 (Huysman & Newberry 1996; also USFWS Log No. 4-2-96-084).

Source Feature Identifier 62246
Source Feature Locator Northern protected area
Source Feature Descriptor 1995-09-19, Newberry and Huysman

Source Feature Identifier 62247
Source Feature Locator Southern protected location
Source Feature Descriptor 1995-09-19, Newberry and Huysman

Surveyors C. Huysman, Soil & Environmental Consultants
Gill Newberry
Survey Type Qualitative ground survey
Survey Date 1996-05-03 **First Observation Date** 1995-09-19 **Last Observation Date** 1996-05-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description The population in the southern portion of the facility is in degraded habitat adjacent to an existing landfill and old roadbed.
Min. Elevation 1,000 **feet** **Max. Elevation** 1,160 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments: Burke County proposed a construction and demolition landfill expansion at the John's River Waste Management Facility in 2010; it is not known whether this would impact the rare plant population (Mitchell pers. comm. 2010).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	BURKE COUNTY PUBLIC WORKS	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18888

EO Number 33

Owner Comments

Management Comments This occurrence is adjacent to Johns River Game Land MA.ID 1352 (Amoroso 2015).

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source C. HUYSMAN (SOIL & ENVIRONMENTAL CONSULTANTS) G. NEWBERRY (USC - SPARTANBURG) 3 MAY 1996 (FIELD SURVEY).

VERSION

Version Author Robinson **Version Date** 2015-10-14

Transcribed By JLA **Transcription Date** 1997-09-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13728

EO Number 34 **Parent EO Number** 93

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
West Shelby Mesic Slope

Survey Site
First Broad River: West Shelby Mesic Slope (This is a sub EO of EO 093).

Directions First Broad River: West Shelby Mesic Slope: This is a sub EO of parent EO 093 (Wichmann 2005). East of the First Broad River at the end of Lackey Street in Shelby and 0.3 mile west of Westview Church (Oakley 2002).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05-19

EO Rank Comment

EO Data Approximately 60 clumps counted, probably more; less than 50% flowering. Plants are scattered throughout SNHA on north-facing slope (Franklin et al. 2005). Only 50 plants or so seen on 30 July in leaf in partial survey of areas within 0.35 mile of Westview Church (Oakley 2002). Vigorous population consisting of many large clumps at the base of trees and younger plants on the slope face 4 June (Newberry & Huysmasn 1997).

Source Feature Identifier 49896

Source Feature Locator West Shelby Mesic Slope

Source Feature Descriptor 2005-05-19; Franklin and Wichmann

Surveyors Huysmans
Newberry
Oakley
Misty Franklin, NHP
Brenda Wichmann, NHP
James Padgett, NHP

Survey Type Qualitative ground survey

Survey Date 2005-05-19 **First Observation Date** 1997-06-04 **Last Observation Date** 2005-05-19

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Mesic, northeast-facing slope, steep enough to remove leaf litter with rainfall; Closed canopy of Fagus grandiflora and Quercus alba; generally open understory of Cornus florida, Oxydendrum arboreum, and Ilex opaca; shrub layer of Hamamelis virginiana, Rhododendron sp. (deciduous), Calycanthus floridus, Ilex sp. (deciduous), Acer negundo, and Euonymus americanus; herbaceuous layer of Vaccinium pallidum, Carex ssp., Tiarella cordifolia, Maianthemum racemosum, Polystichum acrostichoides, Luzula af. acuminata, and Cimicifuga americana (Franklin et al. 2005). Mature wooded north-facing slope, with more disturbed forests to the east, in a rapidly urbanizing area (Oakley 2002).

Min. Elevation 720 **feet** **Max. Elevation** 760 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13728

EO Number 34 **Parent EO Number** 93

General Comments: Plants are on south side of an intermittent tributary of the broad river, areas on north side of the tributary recently cleared for development (Oakley 2002).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	David and Don Brown	

Owner Comments David Brown is the Forester at Dupont State Forest (Franklin et al. 2005).

Management Comments

Protection Comments G. Newberry recommends an environmental easement here to serve as mitigation for impacts at EOR#036 (1997).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.

Old Source G. Newberry (USC-Spartanburg) & C. Huysman (S & EC Inc) 4 June 1997 (Field Survey). S. Oakley, 30 July 2002, Site Survey Report: West Shelby Mesic Slope.

VERSION

Version Author Amoroso **Version Date** 2015-09-10

Transcribed By JLA **Transcription Date** 1997-09-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3733

EO Number 35 **Parent EO Number** 93

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Brushy Creek, unnamed tributary south of SR 1123 (Sub EO of EO 093)

Directions First Broad River: along Brushy Creek (Swaim 2016) and an unnamed tributary south of SR 1123. This is a sub EO of Parent EO 093 (Wichmann 2005). About 0.3 miles west of First Broad River and west of Brushy Creek. near the sewer outfall right-of-way of Cleveland County.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-04-04

EO Rank Comment EO rank based on EO rank specs for this species and most current EO data (Wichmann 2005).

EO Data 2016: Swaim observed 8-10 clumps along Brushy Creek on 2 March 2016. A complete census was not counted (Swaim 2017).2001: Estimated less than 100 plants seen by Padgett on April 4, 2001 (Padgett 2001).1997: Fewer than 100 plants on 4 June 1997 (Newberry & Huysman 1997).

Source Feature Identifier 3733
Source Feature Locator near the sewer outfall right-of-way of Cleveland County
Source Feature Descriptor 1997-06-04; Soil and Environmental Consultants

Source Feature Identifier 106213
Source Feature Locator Brushy Creek, Shelby.
Source Feature Descriptor 2016-03-02; Jon Swaim

Surveyors Newberry
Huysman
James Padgett, ASU
Jon Swaim, McGill Associates, P.A.

Survey Type Qualitative ground survey

Survey Date 2016-03-02 **First Observation Date** 1997-06-04 **Last Observation Date** 2016-03-02

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description mixed hardwoods

Min. Elevation 720 **feet** **Max. Elevation** 760 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Near the sewer outfall right-of-way of Cleveland County.

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3733

EO Number 35 **Parent EO Number** 93

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

Old Source G. NEWBERRY (USC-SPARTANBURG) & C. HUYSMAN (S & EC INC) 4 JUNE 1997 (FIELD SURVEY).

VERSION

Version Author Robinson **Version Date** 2017-10-12

Transcribed By JLA **Transcription Date** 1997-09-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12163

EO Number 36 **Parent EO Number** 307

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Beaver Dam Creek, unnamed tributary S of the Seaboard RR and E of SR 1315

Directions First Broad River: Beaver Dam Creek, unnamed tributary just south of the Seaboard Railroad and east of SR 1315 (Wichmann 2005). North of SR 1314 and west of 1313, in an unnamed tributary of Beaverdam Creek.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 1997-06-04

EO Rank Comment

EO Data In two locations observed by Newberry and Huysman. Sparse population of multiple-aged Dwarf Heartleaf plants on 4 June 1997 (Newberry & Huysman 1997).

Source Feature Identifier 12162

Source Feature Locator First Broad River: Beaver Dam Creek, unnamed tributary S of the Seaboard RR and E of SR 1315

Source Feature Descriptor 1997-06-04; Newberry & Huysman

Surveyors Newberry
Huysman

Survey Type Quantitative ground survey

Survey Date 1997-06-04 **First Observation Date** 1997-06-04 **Last Observation Date** 1997-06-04

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Suitable habitat nearby should be searched.

DESCRIPTION

General Description MIXED HARDWOODS, LOWLANDS

Min. Elevation 840 **feet** **Max. Elevation** 900 **feet**

EO Observed Area **acres**

Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments: This project is the subject of a development grant application (2010).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments Near the sewer outfall right-of-way of Cleveland County.

Management Comments

Protection Comments Large commercial development observed via 2012 aerial imagery immediately adjacent to the population and may have caused direct or indirect impacts (Robinson 2016). Second population will be impacted by sewerline construction and may be transplanted into first population.

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12163

EO Number 36 **Parent EO Number** 307

DOCUMENTATION

Reference Code	Citation
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.

Old Source G. NEWBERRY (USC-SPARTANBURG) & C. HUYSMAN (S & EC INC) 4 JUNE 1997 (FIELD SURVEY).

VERSION

Version Author Robinson **Version Date** 2016-04-15

Transcribed By JLA **Transcription Date** 1997-09-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 7324

EO Number 37 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Hunter Road (Sub EO of EO 099)
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: unnamed tributary south of the Broad River and east of Hunter Road. This is a sub EO of 099 (Wichmann 2005). 0.5 mile south of the Broad River, between road cut and back of trailer on the east side of Hunter Road (SR 1124).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2015-05-19

EO Rank Comment EO rank based on EO rank specs for this species (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2015: Padgett and Feldman counted 3011 plants on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres of EO 99 (Padgett and Feldman 2015).
2005: Site visited and remapped. Counts estimates for the site have the population at around 230-250 plants (Padgett). Estimated between 100-150 plants seen on April 12, 2005 (Padgett 2005).
1996: 150 plants estimated by Newberry in 1995 or 1996 [year not reported] (Newberry 1996).
1994: About 150 plants seen in June 1994 (Newberry 1994).

Source Feature Identifier 68508
Source Feature Locator Broad River/Hunter Road
Source Feature Descriptor Padgett 2012

Surveyors Gill Newberry
James Padgett, NHP
Maxwell Feldman, NHP intern

Survey Type Qualitative ground survey

Survey Date 2005 **First Observation Date** 1994-06 **Last Observation Date** 2005

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments J. E. Padgett collected flower and leaf materials from this site in 2001 for graduate research at ASU.

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Dry-Mesic Oak-Hickory Forest community located on a gently sloping porton of a small unnamed stream near pastures. Dominate canopy speices include Quercus alba, Quercis coccinea, Quercis falcata, Loiriodendron tulipifera. The understory is comprised of Cornus flordia, Oxydendrum arboreum, and Acer rubrum. Shrubs include Kalmia latifolia, Euoynmous americanus, Vaccinium arboreum and Vaccinium pallidum. Vines such as Vitis rotundifolia, Toxicodendron radicans Lonicera japonica, and Smilax glauca are present. Herbs include Hexastylis naniflora, Goodyeara pubescens, Elephantopus tomentosa, Chimaphila maculata, and Mitchella repens (Padgett 2005). Laurel thicket above small stream in Broad River drainage (Newberry 1994).

Min. Elevation 754 **feet** **Max. Elevation** 771 **feet**

EO Observed Area 0.43 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 7324

EO Number 37 **Parent EO Number** 99

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	TOM LAUGHRIDE, 1285 HUNTER ROAD, FOREST CITY, NC 28043	not in latest parcel layer (2015)
Private individual	Christopher Jolley, 398 W V Thompson Rd, Rutherfordton, NC 28139	2012 request for permission, did not respond
Private individual	James and Wanda Dobbins, 142 Jim Dobbins Rd, Rutherfordton, NC 28139	2012 request for permission, did not respond

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.

Old Source G. NEWBERRY (USC-SPARTANBURG) JUNE 1994 (FIELD SURVEY, REPORT TO USFWS).

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By JLA **Transcription Date** 1998-03-18

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 9318
EO Number 38 **Parent EO Number** 96

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Catawba

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Deal Property (Sub EO of EO 096)

Directions Catawba River: Clarence Street, east of Balls Creek Road (SR 1810), 2 miles SW of Shiloh Church (Newberry 1996).

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 1996-06-01
EO Rank Comment Changed from a C to a CD to based on available data and EO rank specs for this species (Wichmann 2005).
EO Data 100-200 plants seen (Newberry 1996).

Source Feature Identifier 9318
Source Feature Locator Claremont
Source Feature Descriptor 1996; Newberry

Surveyors Gill Newberry **Survey Type** Qualitative ground survey
Survey Date 1996-06 **First Observation Date** 1996-06 **Last Observation Date** 1996-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description In seepage areas with Sphagnum (Newberry 1996).
Min. Elevation 940 **feet** **Max. Elevation** 960 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** Located within 2.0 kilometers of sub EOs 039 and 184 and not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: In Newberry (1996), she reports the location as "Claremont Street"; I think this is an error it should be Clarence Street in the town of Claremont because Newberry indicates the property owner, Mr. Deal, lives at "4344 Clarence Street, Claremont, NC" and there is no Claremont Street in this whole area - not near where Newberry has it mapped nor where NHP has it mapped. Also, 4344 Clarence Steet does not exist; however, a Sylvia Deal has owned 4355 Clarence St. since 1993, but this is not near where Newberry has her occurrence mapped on the topo in the report, nor is it southwest of Shiloh as Newberry indicates in the location. It is west of Murray's Mill Pond though, consistant with part of Newberry's discription. 1993 and 1998 aerials do not indicate habitat where Newberry has this occurrence. Did not change NHP mapping to match where Newberry indicates the occurrece on her topo; occurrence remains mapped to Clarence Street (Mason 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	CLYDE DEAL,	4344 CLARENCE STREET, CLAREMONT, NC

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 9318

EO Number 38 **Parent EO Number** 96

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source G. Newberry (USC-Spartanburg) June 1996 (Field Survey, Report to USFWS).

VERSION

Version Author Amoroso **Version Date** 2015-09-18

Transcribed By JLA **Transcription Date** 1998-03-18

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8495

EO Number 39 **Parent EO Number** 96

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Catawba

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Murrays Mill/Upper Balls Creek Natural Area

Survey Site
Catawba River: Balls Creek, Murrays Mill Lake South (sub EO of EO 096).

Directions Catawba River: Balls Creek, Murrays Mill Lake South. This is a sub EO of Parent EO 096 (Wichmann 2005). Shiloh Church; southwest side of Murrays Mill Lake on the north-facing slope north of the cemetery of Shiloh Methodist Church.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-04-18

EO Rank Comment Downgraded from a C to a D based on 2002 data and EO rank specs for this species (Wichmann 2005).

EO Data **2002:** Less than 50 plants along the edge of the lake, viability is good with numerous flowers seen in 2001 and 2002 (Padgett 2002).
1996: About 50 plants observed (Newberry1996).

Source Feature Identifier 28910
Source Feature Locator Shiloh Church
Source Feature Descriptor 2002-04-18; Padgett

Surveyors James Padgett, ASU
Newberry

Survey Type Qualitative ground survey

Survey Date 2002-04-18 **First Observation Date** 1996-06 **Last Observation Date** 2002-04-18

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** This is probably part of a larger overall site which existed before the creation of the lake. Subpopulations are probably found along the lake on both side (Padgett 2005).

DESCRIPTION

General Description This site occurs in a small wooded area between a maintained meadow (below cemetary to Shiloh Methodist Church) and Murray's Mill Lake. The wooded area along the lake was fairly immature with numerous tree species present as sapplings. Various Quercus ssp. and Acer rubrum are dominant (Padgett 2005).

Min. Elevation 900 **feet** **Max. Elevation** **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	SHILOH METHODIST CHURCH?

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8495

EO Number 39 **Parent EO Number** 96

Owner Comments

Management Comments

Protection Comments Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005). Current information (provided by NCDOT) indicates that NCDOT purchased property partially encompassed by EO 184, and no portion of current EO 39 [C. Wells, personal communication with Dennis Herman and Jared Gray, NCDOT, August 2006].

Additional Topics Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F96CON01NCUS	Contributed. 1996. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U04DOT01NCUS	NC Department of Transportation and Catawba Coutny Historical Association. 2004. Draft Conservation Plant for Murrays Mill Conservation Area, Catawba County, NC. 2pp.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source G. Newberry (USC-Spartanburg) June 1996 (Field Survey, Report To USFWS).

VERSION

Version Author Amoroso **Version Date** 2015-09-18

Transcribed By JLA **Transcription Date** 1998-03-18

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8494

EO Number 40 **Parent EO Number** 248

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jonas Road Rare Plant Site

Survey Site
Broad River: McKinney Creek, Jonas Road Rare Plant Site (Sub EO of EO 248)

Directions Broad River: McKinny Creek, Jonas Road Rare Plant Site. This is a sub EO of Parent EO 248 (Wichmann 2005). 1.5 miles south of the Broad River and 0.5 mile south of McKinney Creek along an unnamed tributary. 0.5 mile west of the junction of Jonas Road (SR 1109) and Harris Road (SR 1110).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2005-04-12

EO Rank Comment Downgraded from a BC to a C based on EO data and EO Rank Specs written for this species (Wichmann 2005).

EO Data **2005:** 150-200 plants estimated along for approx. 0.30 mile (Padgett 2005).
2001: Site visit for collection of flower and leaf materials for research (Padgett 2004).
1994: 50- 100 plants seen, multiple aged stands (Newberry 1994).

Source Feature Identifier 28922
Source Feature Locator Jonas Road Rare Plant Site
Source Feature Descriptor 2005; Padgett

Surveyors Newberry
James Padgett, NHP

Survey Type Qualitative ground survey

Survey Date 2005-04-12 **First Observation Date** 1994-06 **Last Observation Date** 2005-04-12

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments J.E Padgett 2001, Site visited for collection of flower and leaf materials for research.

Research Needs Comments

Additional Inventory Needed Y **Comments** This population may extend both above and below the original survey area (Padgett 2005).

DESCRIPTION

General Description Dry-Mesic Oak--Hickory Forest with a thick Kalmia understory along a moderately steep slope and streambed. The dominant canopy species include Quercus alba, Quercus coccinea, Liriodendron tulipifera, Acer rubrum, Fagus grandiflolia. Other associated species include Oxydendrum arboreum, Cornus florida, Polystichium acrostichoides, Chimaphilia maculata, and Goodyera repens (Padgett 2005).

Min. Elevation 705 **feet** **Max. Elevation** 840 **feet**

EO Observed Area 31.00 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8494

EO Number 40 **Parent EO Number** 248

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

Old Source G. Newberry (USC-Spartanburg) June 1994 (Field Survey, Report to USFWS).

VERSION

Version Author Amoroso **Version Date** 2015-10-26

Transcribed By JLA **Transcription Date** 1998-03-18

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12549
EO Number 44

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Granite Falls

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Little Gunpowder Creek Rare Plant Site 1

Survey Site
Little Gunpowder Creek
NCDOT TIP: R-2824
NCDOT TIP: B-2937 on SR 1108 over Little Gunpowder Creek
NCDOT TIP: U-4700 US 321 Corridor

Directions Catawba River: Little Gunpowder Creek. Along Little Gunpowder Creek, its tributaries, and drains. Specifically, between SR 1108 crossings of US 321 on both sides of the highway.

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2011
EO Rank Comment EO rank was changed from an A to a AB based EO rank specs for this species and 2011 data, more data on lansdcape context of this EO is needed to better rank this EO.

EO Data **2015:** Present and observed by Bassette to be in two patches, east of US-321, in 2015 [based on features in shapefile]; no additional information (Bassette NCDOT 2015).**2012:** 617 plants counted by Dustin and NCDOT staff in the spring of 2012 at sites 38, 39, 43, and 44; all sites determined to be 100% H. naniflora (NCSOT 2018).**2011:** 1,235 clusters counted on 02 May 2011 by Frazer, Bassett, Burroughs and Gray within entire NCDOT mitigation site in 2011 (NCDOT 2014).**2009:** 399 individuals counted by Dustin on 21 September and 22 September 2009 at sites 38, 39, and 44; all sites subsequently determined to be 100% H. naniflora (NCDOT 2018).**2005:** 4,262 plants are within construction project area (TIP: B-2937); 324 plants are expected to be impacted by construction activities in 2005; 4,262 plants are to be protected on-site in a 2.7 acre area (Wells 2006). Approximately 4,262 plants were found [extrapolated from sampling 15 circular plots, 1/100 acre in size]; in addition, more than 60 plants were observed north of the old road alignment near the banks of Little Gunpowder Creek outside of NCDOT's property (2005-05);**2000:** 1,836 plants estimated by NCDOT staff prior [2000?] to any impacts [from bridge replacement] occurring; 175 plants transplanted to an approximate 2.7 acre permanent conservation easement adjacent to site in November 2000; after three years, Padgett estimates that 68% survived (HDR and HARP personnel 2005).**2000-2003:** This is an excellent viable population with over 500 plants located in this easement. This site has one of the only transplanted populations in North Carolina where 175 plants were transplanted from areas to be impacted by bridge replacement before the bridge was replaced (Padgett 2005).**2002:** 68% of the transplanted individuals survived as of April 2002, despite drought conditions (Murrell in NCDOT 2009).**2000:** In November 2000, 175 individuals were relocated from the right of way of a NCDOT bridge construction site at Little Gunpowder Creek to an adjacent conservation easement (NCDOT 2009).**1998:** Between 501 and 1000 plants in a 10-100 square-meter area, densely spaced; in flower on 18 May 1998 (Savidge 1998).

Source Feature Identifier 28452
Source Feature Locator Little Gunpowder Creek Rare Plant Site 1 - NCDOT TIP: R-2824
Source Feature Descriptor 1998-05-18, Savidge (1998); 501-1000 plants in a 10-100sqm area; densely spaced

Source Feature Identifier 90095
Source Feature Locator Little Gunpowder Creek Rare Plant Site 1
Source Feature Descriptor 2011-05-02; NCDOT (2014); 1,235 clusters

Source Feature Identifier 90174
Source Feature Locator US-321/U-4700: Site 43
Source Feature Descriptor 2012-04-02; NCDOT (2018); 218 H. naniflora individuals over 0.63 acres (100% H. naniflora)

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12549

EO Number 44

Source Feature Identifier 109813
Source Feature Locator US-321/U-4700: Site 38
Source Feature Descriptor 2009-09-21; NCDOT (2018); 146 individuals over 0.75 acres (100% H. naniflora)

Source Feature Identifier 109814
Source Feature Locator US-321/U-4700: Site 39
Source Feature Descriptor 2009-09-21; NCDOT (2018); 84 individuals over 0.26 acres (100% H. naniflora)

Source Feature Identifier 140798
Source Feature Locator US-321/U-4700: Site 38
Source Feature Descriptor 2012-Spring; NCDOT (2018); 146 individuals (100% H. naniflora)

Source Feature Identifier 140799
Source Feature Locator US-321/U-4700: Site 39
Source Feature Descriptor 2012-Spring; NCDOT (2018); 84 individuals (100% H. naniflora)

Source Feature Identifier 140800
Source Feature Locator US-321/U-4700: Site 44
Source Feature Descriptor 2009-09-22; NCDOT (2018); 169 individuals over 0.30 acres (100% H. naniflora)

Source Feature Identifier 140801
Source Feature Locator US-321/U-4700: Site 44
Source Feature Descriptor 2012-Spring; NCDOT (2018); 169 individuals (100% H. naniflora)

Surveyors HDR personnel
Lochner personnel
James Padgett, ASU (2000-2003), NHP (2005)
Peter Smith, NHP
Jared Gray, NCDOT
Anne Burroughs, NCDOT
Tim Bassett, NCDOT
Mary Frazer, NCDOT

Survey Type Qualitative ground survey

Survey Date 2015 **First Observation Date** 1998-05-18 **Last Observation Date** 2015

Data Sensitive Element N **Comments**

Monitoring Needs Comments This site should be visited and the transplant area monitored. The transplants are all flagged (Padgett 2005). NCDOT work at this site was subject to consultation with USFWS (ASNC log no. 4-2-98-147), and the Biological Opinion anticipated impacts to 324 plants, which would be minimized through transplant. NCDOT also commited to 5 years of monitoring at this site in their Biological Assessment [C. Wells, 8/2006].

Research Needs Comments Live plants at Appalachian State University Greenhouse. Plants were collected during the transplant in November of 2000 (Padgett 2005).

Research Needs Comments

Additional Inventory Needed Y **Comments** Only study area of NCDOT TIP No. U-4700 surveyed; more plants may exist outside of this area (NCDOT 2018). More information is needed about the landscape context of this EO to better rank this occurrence (Wichmann 2005).

DESCRIPTION

General Description North-facing slope over Gunpowder Creek with mesic mixed forest. associates include Kalmia latifolia. (Savidge 1998).Site 38: Wooded areas with the study area are fragmented by heavy human alteration and are best described as Mesic mixed Hardwood Forests, occurring on Cecil sandy loam soils. Associated species: Ilex opaca, Smilax rotundifolia, Acer rubrum, Pinus strobus, Liriodendron tulipifera, Lonicera japonica (NCDOT 2018).Site 39: Wooded areas with the study area are fragmented by heavy human alteration and are best described as Mesic mixed Hardwood Forests, occurring on Pacolet fine sandy loam soils. Associated species: : Ilex opaca, Hexastylis arifolia Prunus serotina, Liquidambar styraciflua, Cornus florida, Smilax rotundifolia, Carya spp., Vitis rotundifolia, Acer rubrum, Oxydendrum arboreum, Pinus virginiana, Quercus alba, Pinus strobus, Liriodendron tulipifera, Tipularia discolor, Xanthorhiza simplicissima, Ligustrum sinense (NCDOT 2018).Site 43: Wooded areas with the study area are fragmented by heavy human alteration and are best described as Mesic mixed Hardwood Forests, occurring on Pacolet fine sandy loam soils.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12549

EO Number 44

Associated species: Pinus strobus, Liquidambar styraciflua, Liriodendron tulipifera, Quercus alba, Ilex opaca, Hexastylis arifolia Rubus argutus, Cornus florida, Prunus serotinia, Smilax rotundifolia, Vitis rotundifolia,Toxicodendron radicans, Acer rubrum, Oxydendron arboreum, Polystichum acrostichoides, Tsuga canadensis, Xanthorhiza simplicissima, Parthenocissus quinquefolia, Lonicera japonica (NCDOT 2018).Site 44: Wooded areas with the study area are fragmented by heavy human alteration and are best described as Mesic mixed Hardwood Forests, occurring on Pacolet fine sandy loam and Chewacla loam soils. Associated species: Ilex opaca, Smilax rotundifolia, Toxicodendron radicans, Acer rubrum, Pinus virginiana, Quercus alba, Pinus strobus, Liriodendron tulipifera, Xanthorhiza simplicissima, Fragaria vesca (NCDOT 2018).

Min. Elevation 1,060 **feet** **Max. Elevation** 1,100 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
US Department of Transpor	NC-DOT	Mitigation easement
Private individual	private	

Owner Comments

Management Comments

Protection Comments This site is part of an NCDOT mitigation easement located between the new bridge and US Highway 321 (Padgett 2005). Bridge replacement may impact site (Savage 1998).

Additional Topics Sites 38, 39, 43, and 44 are within project study area of NCDOT TIP No. U-4700 (NCDOT 2018). "B-2937 (EO 44) is a bridge replacement and road realignment that was completed in 2003. The population was estimated at 1,846 plants by NCDOT staff prior to any impacts occurring. According to James Padgett (via email communication), 175 plants were transplanted from the construction area into an approximate 2.7-acre permanent conservation easement adjacent to the site in November 2000. After three years of monitoring by Padgett, 68% had survived (Padgett, 2004). In May 2005, HDR/HARP visited this site and sampled fifteen 1/100 acre plots. There were approximately 4,262 total H. naniflora plants found on this site yielding a density of 1,567 per acre. In addition, more than 60 plants were observed north of the old road alignment near the banks of Little Gunpowder Creek outside of NCDOT's property" (HDR personnel 2005). This site has one of the only transplanted populations in North Carolina where 175 plants were transplanted before the bridge was replaced; transplants are all flagged (Padgett 2005). Direct construction impacts related to [NCDOT Project] B-2937; 2.68 ac of additional right-of way purchased for a perpetual conservation easement which was expected to protect approximately 1,522 plants (based on species density with the impact area) (Bassette 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12549

EO Number 44

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.
F18DOT02NCUS	N.C. Department of Transportation. 2018. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2018 for NCDOT TIP No. U-4700. Documents and files are from various years including 2009 and 2012 but were supplied to NCNHP in 2018.

Specimen

HERB-USCS, T. SAVIDGE 18 MAY 1998.

HERB.BOON 16382, J E PADGETT AND E. GILLESPIE MAY 18, 2002

Old Source T. Savidge (NC DOT) 18 May 1998 (Field Survey, Form).

VERSION

Version Author Mason **Version Date** 2018-01-24

Transcribed By JLA **Transcription Date** 1998-08-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6412
EO Number 45 **Parent EO Number** 226

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Glen Alpine

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Lake James, near SR 1223 Bridge (sub EO of EO 226).
NCDOT 1998 bridge replacement project

Directions Catawba River: Lake James, near SR 1223 Bridge. This is a Sub EO of Parent EO 226 (Wichmann 2005). On the north side of SR 1223 near bridge H46 on a south-facing slope over the Linville river, 0.4 mile south of Lake James.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05
EO Rank Comment EO rank is based on EO Rank Specs for this species and most recent EO data (Wichmann 2005).
EO Data **2005:** Approximately 11 very small clumps, 1 flowering (Franklin and Wichmann 2005).
1998: Between 51 and 100 plants estimated sparsely spaced in a 10-100 square-meter area (Savidge 1998).

Source Feature Identifier 30196
Source Feature Locator Catawba River: Lake James, near SR 1223 Bridge
Source Feature Descriptor 2005; NCNHP

Surveyors Tim Savidge, NCDOT
Misty Franklin, NHP
Brenda Wichmann, NHP

Survey Type Qualitative ground survey

Survey Date 2005-05 **First Observation Date** 1998-05-18 **Last Observation Date** 2005-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Steep rocky, south-facing slope above the Linville River below Lake James (Savidge 1998).
Min. Elevation 1,080 **feet** **Max. Elevation** 1,120 **feet**
EO Observed Area **acres**
Rep Accuracy High
Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments Owner Name 1:CRESCENT RESOURCES INC
Owner Name 2:
Owner Address:P O BOX 1003
Owner City:CHARLOTTE
Owner State:NC
Zip:28201
Parcel Address:5596 POWERHOUSE RD
Management Comments
Protection Comments Bridge replacement should not impact these plants, they are well outside the Right of Way (1998).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6412

EO Number 45 **Parent EO Number** 226

Additional Topics Bridge replacement appears to have impacted this population, few plants seen in 2005; construction was underway at time of visit, plants were not marked; bottom portion of the south facing slope impacted by construction and temporary fencing (Franklin and Wichmann 2005). Bridge replacement should not impact these plants, they are well outside the Right of Way (1998).

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Specimen

HERB-NCDOT, T. SAVIDGE 18 MAY 1998.

Old Source T. SAVIDGE (NC DOT) 18 MAY 1998 (FIELD SURVEY, FORM).

VERSION

Version Author Amoroso **Version Date** 2015-10-21

Transcribed By JLA **Transcription Date** 1998-08-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16646
EO Number 46 **Parent EO Number** 232

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Buffalo Creek Rare Plant Site

Survey Site
Buffalo Creek Rare Plant Site, N of SR 1908 (sub EO of EO 232)
NCDOT B-2816
NCDOT TIP: R-2824

Directions Buffalo Creek Rare Plant Site, 0.1 to 0.2 miles north of SR 1908 and New Prospect Church. This is a sub EO of Parent EO 232 (Wichmann 2005). On the east side of Buffalo Creek, 0.1 mile north of SR 1908.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2005-04
EO Rank Comment
EO Data **2005:** Estimated 500 plants; this EO has remained generally unchanged since 2001 visit (Padgett 2005).
2005: "It is estimated only 50 plants remain at this site" (HDR and HARP personnel, 2005).
2001: Estimate 500+ plants in 2001 (Padgett 2003).
1998: Over 1,000 densly spaced plants in a 2.5 ac site counted by Savidge on 18 May 1998 (Bassette 2003). Over 1000 plants densely spaced over 1 hectare; in flower on 18 May (Savidge 1998).

Source Feature Identifier 26303
Source Feature Locator Buffalo Creek Rare Plant Site
Source Feature Descriptor 1998; NCDOT

Surveyors Tim Savidge, NC DOT
James Padgett, ASU (2001), NHP (2005).
HDR personnel
HARP personnel

Survey Type Qualitative ground survey

Survey Date 2005-11-15 **First Observation Date** 1998-05-18 **Last Observation Date** 2005-11-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments Site visited and flower and leaf materials collected for research (Padgett 2001).
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Quercis alba, Quercis coccinea, Liriodendron tulipifera, Acer rubrum in canopy. Cornus flordia, Oxydendrum arboreum in the understory. Kalmia latifolia is thick in the shrub layer. Herbs included Goodyeara pubescens, Polystichium acrostichoides, Prenanthes sp., Sanicula sp., Chimaphilia maculata, and others (Padgett 2001). Associated with Kalmia latifolia, very high quality community with little disturbance (Savidge 1998).

Min. Elevation 780 **feet** **Max. Elevation** 860 **feet**
EO Observed Area 2.50 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO85 occurs 2.1 km to the north (Amoroso 2015).

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16646

EO Number 46 **Parent EO Number** 232

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments

Management Comments

Protection Comments This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property (1998).

Additional Topics "B-2816 (EO 46) is a bridge replacement project that was slightly realigned and determined not to impact the Hexastylis population. However, the recent field visit showed that the previously mapped portion of the population no longer existed, possibly due to adjacent landowner maintenance such as bush hogging. Additionally, a new trail was cut through the site where some plants were found, and possibly contributed to the population disturbance. It appeared as though effects from the 2004 hurricane season activity also played a role in the degradation of site integrity and quality. It is estimated that only 50 plants remain at this site, as opposed to the thousand or more that was previously documented by NCDOT and NCNHP in 1998 and 2001" (HDR and HARP personnel, 2005). "B-2816: Situated along SR 1908, the project replaces Bridge No. 230 over Buffalo Creek...this project may affect all of or portions of [EO 046]...environmental permits associated with B-2816 do not authorize any impacts to DFHL near the bridge. An alternative that avoided direct impact to the DFHL population was chosen. The October 2001 field review indicated that no direct, indirect, or cumulative impacts have occurred on the DFHL population locations near the project" (Bassette 2003). The bridge replacement project was moved and will not affect this occurrence (1998).

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Specimen

HERB-NCDOT, T. SAVIDGE 18 MAY 1998.

Old Source T. Savidge (NC DOT) 18 May 1998 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-21

Transcribed By **Transcription Date** 1998-08-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 19611
EO Number 47 **Parent EO Number** 302

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: tributary at NC 150 (Sub EO of EO 302)
NC DOT project R-617C

Directions South Fork Catawba River: tributary at NC 150. Adjacent to NC 150 (south of highway) near the intersection with SR 1406 (Gastonia Highway) approximately 250 feet south of the highway on the north-facing side of an unnamed stream.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05-11
EO Rank Comment
EO Data **2005:** 5 plants counted on 11 May 2005 by Franklin and Wichmann including 1 very large plant with 13 flowers (Franklin and Wichmann 2005).
1999: Fewer than 10 clumps seen in a 3000 square-foot area, with flowers on 29 March 1999 (Rivenbark et al 1999).

Source Feature Identifier 30200
Source Feature Locator South Fork Catawba River: tributary at NC 150.
Source Feature Descriptor 2005; NCNHP

Surveyors Chris Rivenbark, NC Dept of Transportation
Misty Franklin, NHP
Brenda Wichmann, NHP

Survey Type Qualitative ground survey

Survey Date 2005-05-11 **First Observation Date** 1999-03-29 **Last Observation Date** 2005-05-11
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Narrow strip of woods between a residential yard and field (Franklin and Wichmann 2005). Moist,north-facing, mid-slope of stream in poor quality Dry Mesic Oak-Hickory Forest with Quercus alba, Oxydendron arboreum and Chimaphila maculata (Rivenbark et al 1999).

Min. Elevation 850 **feet** **Max. Elevation** 860 **feet**
EO Observed Area **acres**

Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
State government	NC Department of Transportation	

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 19611

EO Number 47 **Parent EO Number** 302

Additional Topics EO is associated with NC DOT project R-617C, see U05HDR01NCUS (Wichmann 2005). Population to be relocated to Indian Creek Wetland Mitigation site (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
F99CON01NCUS	Contributed. 1999. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Old Source Chris Rivenbark (NC DOT) with Tim Savidge, Bruce Ellis, and Lynn Smith, 29 March 1999 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-26

Transcribed By JLA **Transcription Date** 2000-08-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14835
EO Number 48

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Maiden

County Name
Lincoln (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Lippard Creek tributary

Directions Catawba River: Dutchmans Creek-Leepers Creek, Lippard Creek, tributary approximately 5.5 miles southeast of Maiden: on the southwest side of an unnamed tributary to Lippards Creek 0.5 mile east of SR 1003 (Buffalo Shoals Road) and 0.6 mile north of SR 1343.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 1999-05-17
EO Rank Comment
EO Data More than 40 clumps in leaf and flower on 17 May 1999; density of plants at about 1 plant per 3-5 square meters (Cantrell 1999).

Source Feature Identifier 14834
Source Feature Locator Catawba River: Lippard Creek tributary
Source Feature Descriptor 1999; Cantrell

Surveyors Mark Cantrell, USFWS **Survey Type** Qualitative ground survey
Survey Date 1999-05-17 **First Observation Date** 1999-05-17 **Last Observation Date** 1999-05-17
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** "...population probably extends along streambank" (Cantrell 2999).

DESCRIPTION

General Description Piedmont Mixed Mesic Forest on moist, lower slope of stream with northeast aspect (Cantrell 1999).
Min. Elevation **feet** **Max. Elevation** 920 **feet**
EO Observed Area 0.50 **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments GARY MILLER, DEVELOPER
Management Comments
Protection Comments Owner plans a trailer park on portions of the 40 acre tract (1999).
Additional Topics

DOCUMENTATION

Reference Code	Citation
F99CON01NCUS	Contributed. 1999. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14835

EO Number 48

Old Source MARK CANTRELL (USFWS) 17 MAY 1999 (FIELD SURVEY, FORM).

VERSION

Version Author	Robinson	**Version Date**	2015-10-21
Transcribed By	JLA	**Transcription Date**	2000-08-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18569

EO Number 49 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Mouth of Sandy Run Creek, NC DOT sites CC and DD (Sub EO of EO 100).
NCDOT TIP: R-2824
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Mouth of Sandy Run Creek. This is a sub EO of Parent EO 100 (Wichmann 2005). 3 miles south of Boiling Springs on the east bank of Sandy Run near its confluence with the Broad River (Padgett 2001). Sub-occurrence 1: at the confluence. Sub-occurrence 2: ca. 0.25 mile northeast of the confluence, along an intermittent stream (Oakley 2001); James Padgett's 2001 Site M (Padgett Map); NC DOT Broad River Tract Site CC (Bassette 2003). Subpop 3: 0.1 mile north of the confluene; James Padgett's 2001 Site I (Padgett Map). NC DOT Broad River Tract/IP mitigation site DD (Bassette 2003).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-04

EO Rank Comment

EO Data

2012: 748 plants were counted at population CC and 44 plants were counted at population DD on 28 March by NCDOT biologists (Bassette).

2011: The smallest sub-population right along the creek was visited in May 2011 by Padgett, with no plants being located at this site which had previously had 5-10 plants (Padgett 2015).

2008: 538 plants total observed at sites 2 (CC) and 3 (DD) by NCDOT biologists in April 2008 (Bassette 2009).

2003: 667 observed plants over 1.6 acres (HDR 2003). 707 plants observed [estimated] by NC DOT (Bassette 2003).

2001: Subpop 1: Fewer than 200 clumps observed in a 600 by 600 foot area, with buds on 4 February (Padgett 2001); Subpop 2: Estimate of 200 plants in bud on 6 March in Dry-Mesic Hardwood Forest (Oakley 2001).

Source Feature Identifier 30226
Source Feature Locator Broad River Tract, Sandy Run Creek, Site CC
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30227
Source Feature Locator Broad River Tract, Sandy Run Creek, Site DD
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 89571
Source Feature Locator Broad River Greenway Conservation Area, Site CC
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89572
Source Feature Locator Broad River Greenway Conservation Area, Site DD
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors Oakley
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2012-03-28 **First Observation Date** 2001-02-04 **Last Observation Date** 2012-03-28

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18569

EO Number 49 **Parent EO Number** 100

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Individuals not counted, estimates only (Wichmann per comm. with Padgett 2005).

DESCRIPTION

General Description Subpop1: north to northwest facing steep creek bank with Hepatica americana, Kalmia latifolia, Acer rubrum, and Quercus sp.; Subpop 2: Dry-Mesic Hardwood Forest; presumably the same intermittent drainage as pop 1, gentle north-facing slope near head of intermittent drainage, no Kalmia present but extending upslope to edge of Pinus-Vaccinium-Epigaea habitat (Oakley 2001).

Min. Elevation 640 **feet** **Max. Elevation** 720 **feet**

EO Observed Area 10.00 **acres**

Rep Accuracy Medium

Separation Comments The smallest of the subpopulations was visited in 2011 with the Broad River Greenway and no plants were located (Padgett 2015). --- Two sub-populations located about 400 meters apart make up this EO; Several sub-EOs are also associated with this EO; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Local government	Cleveland County	

Owner Comments This site is now part of the Broad River Greenway. -- MR. WHITFIELD

Management Comments

Protection Comments NC DOT mitigation site (in part); see Reference U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005). Land is reported to be sold to developers (2001).

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

Old Source J.Padgett (ASU) 4 February 2001 (Field Survey, Form); S. Oakley, March 5-6, 2001, Site Survey Report: Broad River/Sandy Run Natural Areas (Broad River at Sandy Run Subsite).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18569

EO Number 49 **Parent EO Number** 100

VERSION

Version Author	Robinson	**Version Date**	2016-04-27
Transcribed By	JTF	**Transcription Date**	2001-03-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18568

EO Number 50 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: tributaries between Flint Hill and Jolly Mountain (Sub of 100).
NCDOT TIP: B-2119
NCDOT TIP: R-2707 US 74 Shelby Bypass
NCDOT Broad River Tract Mitigation

Directions Broad River/Sandy Run Natural Areas: unnamed tributaries between Flint Hill and Jolly Mountian. NC DOT Broad River Tract Site: HH. This is a sub EO of principal EO 100 (Wichmann 2005). About 3 miles south of Boiling Springs, on the north to northwest slope of Jolly Mountain.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-04

EO Rank Comment

EO Data
2012: 4712 plants were counted on 2 April (Bassette 2015).
2009: Plants observed to be present by Jones in January, April, and June 2009; no count made (Jones 2009).
2008: 1,397 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2003: 919 plants observed by NC DOT Personnel (Bassette 2003).
2001: About 1000 clumps estimated over several acres, in bud on 4 February (Padgett 2001).

Source Feature Identifier 30235
Source Feature Locator Broad River Tract, Jolly Mountain Site Q, Site HH
Source Feature Descriptor 2003; NCDOT Contractor

Surveyors NC DOT Personnel
James Padgett, ASU
Matt Jones, Garner-Webb Univ. undergrad

Survey Type Qualitative ground survey

Survey Date 2012-04-02 **First Observation Date** 2001-02-04 **Last Observation Date** 2012-04-02

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Species verified while in flower in 2001 during surveys for Hexastylis naniflora with NCDOT (Padgett 2005).

DESCRIPTION

General Description North to northwest facing slope of Jolly Mountain with Hepatica americana, Kalmia latifolia, Acer rubrum, and Liriodendron tulipifera (lower slopes).

Min. Elevation 720 **feet** **Max. Elevation** **feet**

EO Observed Area 10.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 18568

EO Number 50 **Parent EO Number** 100

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Corporation	International Paper	
Local government	Broad River Greenway	Cleveland County and the Town of Boiling Springs.

Owner Comments International Paper

Management Comments

Protection Comments Part of this site is still owned by a developer (The top of Jolly Mountain, 100 acres), but most of the site is now part of the Broad River Greenway after it was purchased and dedicated to the greenway by NC DOT in 2003 (Padgett 2005). --Land is reported to be sold to developers (2001).

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
FNDCLE01NCUS	Oakley, S.C. 2002. Field surveys for Cleveland County natural areas inventory, 2002.
U01HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2001. Feasibility Study: Broad River Study Area, Cleveland County, North Carolina.
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

Old Source J.Padgett (ASU) 4 February 2001 (Field Survey, Form)

VERSION

Version Author Amoroso **Version Date** 2016-04-18

Transcribed By JLA **Transcription Date** 2001-03-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12161

EO Number 51 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Sandy Run Crk; perennial tributary N of Flint Hill (Sub of 100)
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Sandy Run Creek, perennial tributary north of Flint Hill; NC DOT Broad River Tract sites AA and BB; James Padgett's 2001 sites A, B, C, D,E, F, G, and H. This is a sub EO of Principal EO 100 (Wichmann 2005). NC DOT Mitigation site [in part] primarily for R-2707, also known as the IP or Broad River Tract (HDR 2005). About 3 miles south of Boiling Springs, on the banks of the first upstream, permanent stream tributary on the east side of Sandy Run from its confluence with Broad River.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-04

EO Rank Comment

EO Data **2012:** 17 plants counted at population AA and 2346 plants counted at population BB by NCDOT biologists on 11 April 2012. (Bassette 2015).
2008: 515 plants counted at sites AA and BB by NCDOT biologists in April 2008 (Bassette 2009).
2003: 11 individuals scattered among rock outcroppsings (HDR 2003). 310 observed by NC DOT (Bassette 2003).
2002: Parts of this EO visited in 2001 and 2002 with NCDOT while plants were in flower (Padgett 2002).
2001: Over 1000 clumps estimated over a 0.5 mile area, with buds on 6 February. Many seedlings present (Padgett 2001).

Source Feature Identifier 12160
Source Feature Locator Sandy Run Creek
Source Feature Descriptor 2001; Padgett

Source Feature Identifier 30230
Source Feature Locator Broad River Tract Site BB, Sandy Run Creek
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30231
Source Feature Locator Sandy Run Creek, site G
Source Feature Descriptor 2001; NCDOT

Source Feature Identifier 30233
Source Feature Locator Sandy Run Creek, Sites D, E, and F
Source Feature Descriptor 2001; NCDOT

Source Feature Identifier 30234
Source Feature Locator Broad River tract, Sandy Run Creek, Site AA
Source Feature Descriptor 2003; NCDOT contractor

Source Feature Identifier 89568
Source Feature Locator Broad River Greenway Conservation Area, Site AA
Source Feature Descriptor 2012; NCDOT Contractor

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12161

EO Number 51 **Parent EO Number** 100

Source Feature Identifier 89570
Source Feature Locator Broad River Greenway Conservation Area, Site BB
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors HDR Engineering Inc. Personnel
NC DOT Personnel
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2012-04-11 **First Observation Date** 2001-02-06 **Last Observation Date** 2012-04-11

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description On the north to northwest facing slopes of permanent and perennial tributaries to Sandy Run. Element occurs in good canopy openings. associated species include Botrychium dissectum, Goodyera pubescens, Tipularia discolor, Acer rubrum, ilex opaca, Kalmia latifolia, Rhododendron minus, Quercus prinus, Quercus alba, Leucothoe axillaris, and Oxydendron arboreum.

Min. Elevation 680 **feet** **Max. Elevation** 842 **feet**

EO Observed Area 9.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Local government	Broad River Greenway	Cleveland County and the town of Boiling Springs.
Corporation	International Paper	

Owner Comments Broad River Greenway (Padgett 2005). --International Paper and others

Management Comments

Protection Comments NC DOT mitigation site [in part] see References U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005). Land purchased by NCDOT and dedicated to the Broad River Greenway in 2003 (Padgett 2005). Land is reported to be sold to developers (2001).

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12161

EO Number 51 **Parent EO Number** 100

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
FNDCLE01NCUS	Oakley, S.C. 2002. Field surveys for Cleveland County natural areas inventory, 2002.
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

Specimen

HERB.ASU, J. Padgett, 2001

HERB.GARDNER WEBB, J. Padgett 2001

Old Source J.Padgett (ASU) 6 February 2001 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2016-04-18

Transcribed By JLA **Transcription Date** 2001-03-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 2113

EO Number 52 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hensons Creek Natural Area

Survey Site
Broad River: Hensons Creek Natural Area, Big Island Plantation (west) (Sub EO of EO 099).

Directions Broad River: Hensons Creek Natural Area, Big Island Plantation (west). This is a sub EO of Parent EO 099 (Wichmann 2005). 0.1 mile north of the Broad River and west of SR 1106. The site is known as The Big Island Plantation LLC (Padgett 2005). West side of SR 1106 just north of the Broad River.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2001-05-13

EO Rank Comment

EO Data **2012**: Site visited in 2012 in attempt to gain permission to monitor (Padgett 2015).
2005: 200-300 plants estimated on March 2005 (Padgett 2005).
2001: 200-300 clumps in leaf and flower on 6 April (Padgett 2001)

Source Feature Identifier 28913

Source Feature Locator Broad River: Hensons Creek Natural Area, Big Island Plantation (west)

Source Feature Descriptor 2001; Padgett

Surveyors James Padgett, ASU (2001), NHP (2005) **Survey Type** Qualitative ground survey

Survey Date 2005-03 **First Observation Date** 2001-04-06 **Last Observation Date** 2005-03

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Along the road with Quercus alba, Kalmia latifolia, Hepatica americana, and Polystichum acrostichoides (Padgett 2001)

Min. Elevation 200 **feet** **Max. Elevation** 260 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Partnership (legal entity)	Keith Hawthorn	1-800-721-8434 Hawthorn Ford in Belmont
Partnership (legal entity)	Keith Hawthorn's Father-in-law	Name Unknown

Owner Comments

Management Comments Much trash has accumulated in subpopulation 2 along the road (Padgett 2001).

Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 2113

EO Number 52 **Parent EO Number** 99

Additional Topics

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Old Source J.E. Padgett (ASU) 13 April & 6 May 2001 (field survey, form).

VERSION

Version Author Padgett **Version Date** 2015-09-18

Transcribed By JLA **Transcription Date** 2001-10-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 9779

EO Number 53 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: McKinney Bridge (This is a sub EO of 099).

Directions Broad River: McKinney Bridge. This is a sub EO of Parent EO 099 (Wichmann 2005). Middle Broad River: 0.2 mile west of McKinney Road (SR1111) bridge over the Broad River on steep north-facing bluff.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-05

EO Rank Comment

EO Data **2003:** Less than 35 clumps estimated (Padgett 2003).
2001: Fewer than 35 clumps and single and double leaves seen in a 100 square-foot area; plants in flower on 2 April, but population shows poor reproduction (Padgett 2001).

Source Feature Identifier 28540
Source Feature Locator Broad River: McKinney Bridge
Source Feature Descriptor 2003; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey

Survey Date 2003-05 **First Observation Date** 2001-04-02 **Last Observation Date** 2003-05

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic hardwoods along a bluff overlooking the river with Quercus alba and Kalmia latifolia abundant (Padgett 2001).

Min. Elevation 200 **feet** **Max. Elevation** 230 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments

Management Comments Some trees have been cut along the edge of the site recently (Padgett 2003).

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 9779

EO Number 53 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Old Source J.E. PADGETT (ASU) 2 APRIL 2001 (FIELD SURVEY, FORM).

VERSION

Version Author Amoroso **Version Date** 2015-10-08

Transcribed By JLA **Transcription Date** 2001-10-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4030
EO Number 54 **Parent EO Number** 248

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: McKinney Creek, Jebb Lamb Road Bridge (SR 1108) (Sub EO of EO 248).

Directions Broad River: McKinney Creek, Jebb Lamb Road Bridge (SR 1108). This is a sub EO of Parent EO 248 (Wichmann 2005). Located along McKinney Creek in the southern part of Rutherford County about 1 mile south of the Broad River on the west side of SR 1108 near the bridge on Jebb Lamb Road (SR 1108) where it crosses over the creek. From the bridge the plants are upstream. (Padgett 2001).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-04-01
EO Rank Comment
EO Data **2005:** 20-30 plants estimated seen on April 12, 2005 (Padgett 2005).
2001: Fewer than 30 clumps seen in a 100 yard stretch along the north facing side of the creek; plants in leaf and flower on 1 April (Padgett 2001).

Source Feature Identifier 28923
Source Feature Locator McKinney Creek, Jebb Lamb Road Bridge (SR 1108)
Source Feature Descriptor 2001: Padgett

Surveyors James Padgett, ASU (2003), NHP (2005) **Survey Type** Qualitative ground survey
Survey Date 2005-04-12 **First Observation Date** 2001-04-01 **Last Observation Date** 2014-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** This population may extend along the creek beyond the area surveyed in suitable habitat (Padgett 2005).

DESCRIPTION

General Description Mesic hardwood community along creek bank which includes Quercus alba, Liriodendron tulipifera, Acer rubrum, Kalmia latifolia and Leucothoe axillaris, Heuchera americana. Area is fairly open due to a cutover on the north side of the creek (Padgett 2001).
Min. Elevation **feet** **Max. Elevation** 220 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4030

EO Number 54 **Parent EO Number** 248

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Old Source J.E. Padgett (ASU) 1 April 2001 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-02

Transcribed By JLA **Transcription Date** 2001-10-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10378

EO Number 55 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake (Sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake. This is a sub EO of parent EO 099 (Wichmann 2005). Subpopulation 1[A] is east of Jack McKinney Road (SR 1111) About 0.9 mile north of the Broad River on two small springs which fork into a pond which drains into Richardson Creek (Padgett 2001). Subpopulation 2 [See EO 079] is off of SR 1115 south of Harris approximately 0.3 mile behind Riverside Church on north facing slope of unnamed tributary of Richardson Creek. Subpopulation 3 [B] Is 0.1 mile north of subpopulation 1 along a spring (Padgett 2002).

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2015-05-19

EO Rank Comment

EO Data **2015**: 3011 plants counted by Padgett and Feldman on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres (Padgett and Feldman 2015).
2014: Padgett counted 3094 plants within monitoring plots for principal EO 99 on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area (Padgett 2014).
2013: Monitoring Data is part monitoring data for Principle EO 99 (Padgett 2013). 1116 plants counted by Padgett and Israel on 7 May 2013 (Padgett 2013).
2012: 1309 plants were counted by Padgett and Israel on 16 July 2012 (Padgett 2012). Area impacted by logging in summer of 2005 (Padgett 2005).
2001: Subpopulation 3 [b]: more than 50 single leafs and clumps of leaves observed along 50-75 feet of spring; in bud on 2 february, seedlings present (Padgett 2002). Subpopulation 1[a]: 100-200 clumps plus single and double leaves occur along 200 feet of each springhead; not many young plants present; Subpopulation 2 [See EO 079]: 200-300 clumps along 100 yard of the stream; high flower numbers and seedling numbers especially in the cutover portion of the site; both populations have plants in leaf and flower on 1 April (Padgett 2001).

Source Feature Identifier 28916
Source Feature Locator Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake.
Source Feature Descriptor 2012; Padgett; Sub EO 055 [A] of principal EO 099

Source Feature Identifier 28936
Source Feature Locator Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake.
Source Feature Descriptor 2012; Padgett; Sub EO 055 [B] of principal EO 099

Source Feature Identifier 68200
Source Feature Locator Richardson Creek, northeast of McKinney Bridge, EO 55 plots
Source Feature Descriptor Padgett EO 55 plots

Source Feature Identifier 89960
Source Feature Locator Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake.
Source Feature Descriptor Bloom 2016; sub population A

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10378

EO Number 55 **Parent EO Number** 99

Source Feature Identifier 89961

Source Feature Locator Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake.

Source Feature Descriptor Bloom 2016; sub population B

Surveyors James Padgett, ASU (2001); NHP (2005)
Kimberly Israel, NHP
Sean Bloom, CLC
Maxwell Feldman, NHP intern

Survey Type Qualitative ground survey

Survey Date 2016-05-25 **First Observation Date** 2001-04-01 **Last Observation Date** 2016-05-25

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Subpopulation 3 [B]: Mixed Hardwood community on an upland flat along a moist to dry moisture regime, with moderately filtered to shady light conditions. Associated species found at the survey site include: Acer rubrum, Liriodendron tulipifera, Quercus alba, Viburnum spp., Cornus florida, and several ferns spp. (Padgett 2002). Subpopulation 1[A]: mesic hardwood community including Fagus grandifolia, Pinus virginica, Polystichum acrostichoides and Lonicera japonica. Area was cutover about 25 years ago. Subpopulation 2 [See EO 079]: Mesic hardwood cove community including Quercus alba, Sanguinaria canadensis, Polystichum acrostichoides, and Hepatica americana. Part of the area was cutover in the past 5 years (Padgett 2001).

Min. Elevation 215 **feet** **Max. Elevation** 220 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments This EO is comprised of two sub-occurrences which are located east of SR 1111 and west of Richardson Creek; former subpopulation 3 of this EO is now sub EO 079 and is located east of Richardson Creek; EO 055 and EO 079 are sub EOs of principal EO 099; all sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	William Lowe, P O Box 48, Harris 28074	2012 permission request, email response with permission granted
Corporation	Chapman Sod LLC	2012 permission request, did not respond. 2016, responded to phone call with permission.

Owner Comments Chapman Sod Farm Manager Jamie Spears 864-680-3509 (2016).

Management Comments Area impacted by logging in summer of 2005 (Padgett 2005). Evidence of off-road vhicle use damaging some of the habitat at subpopulation 1[A] (Padgett 2001).

Protection Comments

Additional Topics Landowner has logged parts of the tract where some of this EO is present. A 100 foot buffer was left along stream corridor where this EO occurs. Parts of the EO was impacted along slopes away from the stream on a north-facing slope that was logged. The plants persist after the logging in the impacted area. It is not known wheither the species can survive clear-cutting events in the long term. Known populations occurring in clearcuts seem to thrive after clearcutting for a short time, then decline rapidly (Padgett 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10378

EO Number 55 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

Specimen

HERB.BOON 15992, J E PADGETT APRIL 04, 2001

HERB.BOON 16001, J E PADGETT APRIL 04, 2001

HERB.BOON 16385, J E PADGETT APRIL 20, 2002

Old Source J.E. Padgett (ASU doctoral student) 2 February 2002 (Field Survey, Form). J.E. Padgett (ASU doctoral student) 1 April 2001 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2016-06-17

Transcribed By JLA **Transcription Date** 2001-10-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8209
EO Number 56 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek (sub EO of EO 247)

Directions Broad River: Floyds Creek, located south of Henson's Road and 0.6 mile west of its junction with the Railroad. This is a sub EO of Parent EO 247. Floyds Creek tributary south of Hensons Road on the north facing slopes of the tributary to Floyds Creek, south of the road (Padgett 2013).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-04-06
EO Rank Comment EO rank is based on EO Rank Specs for this species and most recent EO data (Wichmann 2005).
EO Data **2002:** Site unchanged from previous visit (Padgett 2002).
2001: Less than 150 clumps including single and double leaves seen, seedlings present, in flower on 6 April (Padgett 2001).

Source Feature Identifier 30491
Source Feature Locator Broad River: Floyds Creek, located south of Henson's Road
Source Feature Descriptor 2001; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2002-04-21 **First Observation Date** 2001-04-06 **Last Observation Date** 2002-04-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments J E Padgett collected flower and leaf materials for graduate research (2001)
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Small strip of woods between the creek and a powerline Right-of-Way Other species present inlcude Hepatica americana and Polystichum acrostichoides (Padgett 2001).
Min. Elevation **feet** **Max. Elevation** 760 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	

Owner Comments
Management Comments
Protection Comments
Additional Topics Site may be impacted by bridge replacement (Padgett 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 8209

EO Number 56 **Parent EO Number** 247

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Specimen

HERB.BOON 15990, J E PADGETT APRIL 06, 2001

Old Source J.E. Padgett (ASU) 6 April 2001 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-22

Transcribed By JLA **Transcription Date** 2001-10-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 1776
EO Number 57

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Second Broad River: Morrow Ceek, tributary NW of RR ROW, about 0.4 miles NE of Alt 221

Directions Second Broad River: Morrow Creek, along a tributary just northwest of Rail Road Right-of-Way, approximately 0.4 miles northeast of its junction with ALT 221 (Wichmann 2005). Alexander Mills, south of Forest City, approximately 0.25 mile north of Alt 221, along a stream to the west of railroad (Padgett 2001).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2001-05-18
EO Rank Comment
EO Data MORE THAN 300 CLUMPS OCCURRING ALONG SMALL STREAM FOR 0.1 MILE, IN EARLY FRUIT (SEED MATURING) ON 18 MAY 2001 (PADGETT 2001).

Source Feature Identifier 28603
Source Feature Locator Second Broad River: Morrow Creek, along a tributary just northwest of Rail Road Right-of-Way
Source Feature Descriptor 2001; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2001-05-18 **First Observation Date** 2001-05-18 **Last Observation Date** 2001-05-18
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Located approximately 3.0 kilometers from EO 154, suitable habitat between occurrences should be searched (Wichmann 2005).

DESCRIPTION

General Description HARDWOOD FOREST WITH QUERCUS SPP, ACER RUBURM, CORNUS FLORIDA, OSMUNDA CINNAMOMEA, AND MITCHELLA REPENS (PADGETT 2001).
Min. Elevation 870 **feet** **Max. Elevation** 900 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** Located approximately 3.0 kilometers from EO 154; EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE - AGI?	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 1776

EO Number 57

DOCUMENTATION

Reference Code	Citation
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Specimen

HERB.BOON 16000, J E PADGETT MAY 18, 2001

Old Source J.E. PADGETT (ASU) 18 MAY 2001 (FIELD SURVEY, FORM).

VERSION

Version Author Robinson **Version Date** 2015-10-08

Transcribed By JLA **Transcription Date** 2001-10-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16776
EO Number 58

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Longview

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Camp Creek, south SR 1120

Directions South Fork Catawba River: Camp Creek, south of Greedy Road (SR 1120). "North on Hwy 127 from Prospect Crossroads to Greedy Rd. Left on Greedy road to Hudson Road. Upstream from Hudson Rd. approximately 500 meters. Growing along wooded ridge above Creek" (Padgett and Gillespie 2002).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-04-18
EO Rank Comment EO rank based on EO rank specs for this species (Wichmann 2005).
EO Data 25-50 clumps (some singles) in leaf and flower on 18 April 2002; along 100 feet of wooded ridge; seedlings present (Padgett and Gillespie 2002).

Source Feature Identifier 28654
Source Feature Locator South Fork Catawba River: Camp Creek, south of Greedy Road (SR 1120)
Source Feature Descriptor 2002; Padgett

Surveyors James Padgett, ASU
Emily Gillespie, ASU

Survey Type Qualitative ground survey

Survey Date 2002-04-18 **First Observation Date** 2002-04-18 **Last Observation Date** 2002-04-18

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mixed hardwoods with Quercus alba, Quercus coccinea, and Liriodendron tulipifera in the canopy. The understory was comprised of canopy species: Acer rubrum, Cornus florida, Sassafras albidum, and Prunus serotina. Shrubs present were Kalmia latifolia and Vaccinium arboreum. Vitis rotundifolia, Toxidocdendron radicans ans Smilax were vines present along the creek and slope. Herbs include Hexastylis naniflra, Hepatica americana, Polystichum acrostichoides, and Viola spp. The soils are a sandy loam (Padgett and Gillespie 2002).

Min. Elevation 950 **feet** **Max. Elevation** 1,010 **feet**
EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual		

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16776

EO Number 58

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.

Specimen

HERB.BOON 16387, J E PADGETT AND EMILY GILLESPIE APRIL18, 2002

Old Source PADGETT, J., AND E. GILLESPIE. 2002. NC NHP ENDANGERED AND RARE PLANT FIELD SURVEY FORM.

VERSION

Version Author Robinson **Version Date** 2015-10-27

Transcribed By J. Amoroso **Transcription Date** 2002-06-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4708
EO Number 59

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Stony Point

County Name
Alexander (NC)

Watershed
03040102 - South Yadkin

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Third Creek Rare Plant Site

Survey Site
Hunter Bridge Road
Third Creek Rare Plant Site

Directions South Yadkin River, Third Creek: Three locations in the vicinity of Third Creek, 1.5 miles east of Taylorsville: Site 1 occurs along Third Creek off Hunter Bridge Road (SR-1628) (Padgett); Site 2 occurs south along US Highway 64 along a predominantly south flowing unnamed tributary of Third Creek; and Site 3 occurs north along US Highway 64 along a predominantly south flowing unnamed tributary of Third Creek (Padgett 2010).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2010-03-21

EO Rank Comment C-rank given due to its regional location (only known Yadkin River Basin site) within the known populations, as well as additional plants located within this site (Padgett 2010) -- This site might requre a higher site ranking. It is the only site in Alexander County and the only site in the Yadkin River Drainage to date (Padgett 2005). Sites 2 and 3 are CD ranked (Padgett 2010).

EO Data **2010:** Site 1: Additional survey work along unnamed north to south flowing tributary of Third Creek found plants in flower on 3/21/2010 on both the north and south sides of U. S. highway 64. There is an estimated 30-50 plants on the south side of the highway and 75-100 plants north of the highway (Padgett 2010).
2010: Site 2: 50-75 clumps found in hardwoods on wooded slopes along unnamed tributary of Third Creek. In flower on March 21, 2010 (Padgett 2010).
2010: Site 3: 50-75 clumps found in hardwoods on wooded slopes along unnamed tributary of Third Creek. In flower on 3-21-2010 (Padgett 2010).
2005: Site 1: 78 plants counted: 11 flowering, 5 vegetative, plant occur mostly on the slope, not much on ridge by creek (Franklin and Wichmann 2005).
2002: Site 1: 100-200 plants seen along small stream and along ridge on 10 October (Padgett 2002). 50-75 plants occurring along the ridge for 300 feet. flowering sparsely on 5 April (Padgett 2002).

Source Feature Identifier 54010
Source Feature Locator Site 1, South of US-64 & West of SR-1628
Source Feature Descriptor 2010; NCNHP

Source Feature Identifier 54013
Source Feature Locator Site 2, UT of Third Creek, South of US-64 & East of SR-1628
Source Feature Descriptor 2010; NCNHP

Source Feature Identifier 54014
Source Feature Locator Site 3, North of US-64 & East of SR-1628
Source Feature Descriptor 2010; NCNHP

Surveyors James Padgett, NCNHP
Franklin
Wichmann
Emily Parisher, ASU

Survey Type Qualitative ground survey

Survey Date 2010-03-21 **First Observation Date** 2002-04-05 **Last Observation Date** 2010-03-21

Data Sensitive Element N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4708

EO Number 59

Monitoring Needs Comments J. E. Padgett conducted NCVS on site on 10-2-2002 (Padgett 2005).
Much of the occurrence located along US Highway 64 resides within the NCDOT road right-of-way (Padgett 2010).

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

Research Needs Comments

Additional Inventory Needed Y **Comments** Additional occurrences may exist within 2.2 km of this location along small streams with wooded north-facing slopes (Padgett 2010).

DESCRIPTION

General Description Mixed hardwoods over sandy loam soil to disturbed community with Ligustrum. Associated species include Quercus alba, Ligustrum, Thalictrum thalictroides, Ilex opaca, Hepatica americana. There is a fence going through the area and past disturbance may be due to past cattle presence (Padgett 2002).

Min. Elevation **feet** **Max. Elevation** 400 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All source features are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

General Comments: Parent EO 290 and Sub EOs 288 and 289 were merged into this single record as all were closer than 1 km to one another (Amoroso 2015).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Hunter	
State government	NCDOT	

Owner Comments

Management Comments

Protection Comments Part of the population lie within the NCDOT roadway corridor for U. S. Highway 64.

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
G12PAD01NCUS	Padgett, J. E. 2012. Alexander County Natural Areas Inventory. NC Natural Heritage Program, Raleigh, NC.
F10NHP01NCUS	NCNHP Staff, 2010 Field Survey
F02NCV01NCUS	North Carolina Vegetation Survey. 2002. Vegetation sample data.

Specimen

HERB.BOON 16376, J E PADGETT APRIL 03, 2002

Old Source J.E. Padgett (ASU Doctoral Student) 5 April 2002 (Field Survey, Form).

VERSION

Version Author Amoroso **Version Date** 2015-10-29

Transcribed By JLA **Transcription Date** 2002-12-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4709

EO Number 60 **Parent EO Number** 98

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Hulls Crossroads (Sub EO of EO 098)
NC DOT TIP: B-2119

Directions South Fork Catawba River: Hulls Crossroads. Indian Creek, Little Indian Creek, unnamed tributary at Hulls Crossroads. This is a sub EO of Parent EO 098 (Wichmann 2005). Near bridge on SR 1111 (Hulls Crossroads) Over tributary of Little Indian Creek, 1.7 miles from intersection with Highway 127.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-04-06

EO Rank Comment

EO Data **2012:** Wagner et. al. counted 20-50 plants on 16 March 2012. Plants budding but not in full bloom (Wagner 2012).
2001: 100-200 clumps consisting of single or double leaves occuring for 400 feet along the slope for some 200 feet up the slope; with flowers on 6 April (Padgett 2001).

Source Feature Identifier 4709
Source Feature Locator South Fork Catawba River: Hulls Crossroads
Source Feature Descriptor 2001; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey

Survey Date 2012-03-16 **First Observation Date** 2001-04-06 **Last Observation Date** 2012-03-16

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic hardwood community on sandy loam soil with Pinus virginiana at the top of the slope. Associated species include Hepatica americana, Ilex opaca, Quercus sp, Cornus florida, Rubus sp, Fagus grandifolia, Polystichum acrostichoides (Padgett 2001).

Min. Elevation **feet** **Max. Elevation** 1,000 **feet**

EO Observed Area **acres**

Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Private	

Owner Comments

Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4709

EO Number 60 **Parent EO Number** 98

Protection Comments

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

Specimen

HERB.BOON 15991, J E PADGETT APRIL 06, 2001

Old Source J.E. Padgett (ASU doctoral student) 6 April 2001 (field survey, form).

VERSION

Version Author Amoroso **Version Date** 2015-10-08

Transcribed By JLA **Transcription Date** 2002-12-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16879

EO Number 61 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Unnamed tributary at SR 1115 & 1116 (This is a sub EO of 099).

Directions Broad River: unnamed tributary at SR 1115 and 1116. This is a sub EO of parent EO 099 (Wichmann 2005). East of Spicer Rd. (SR 1115), Along a tributary 0.3 mile north of the Broad River, 0.6 mile south of the intersection of SR 1115 and SR 1116. This site is along a stream that leads to a substation recently placed in by the Riverstone Development Group.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2002-02-03

EO Rank Comment EO rank based on EO rank specs for this species and most recent EO data (Wichmann 2005). Rank lowered [to a BC] due to habitat quality; although many plants, the population is within a pine plantation however there are several small streams which are buffered by hardwoods.

EO Data **2002:** Estimated between 750-1000 single leaves or multiple leaf clumps, in bud on 3 February (Padgett 2002).

Source Feature Identifier 28549

Source Feature Locator Broad River: unnamed tributary at SR 1115 and 1116

Source Feature Descriptor 2002; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey

Survey Date 2002-02-03 **First Observation Date** 2002-02-03 **Last Observation Date** 2002-02-03

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mixed hardwoods along stream within plantation of loblolly pine. associated species include Ilex opaca, Fagus grandifolia, Quercus alba, Hepatica americana, Prunus sp, Cornus florida, and several fern species (Padgett 2002).

Min. Elevation 709 **feet** **Max. Elevation** 768 **feet**

EO Observed Area **acres**

Rep Accuracy Medium **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Population is along the edge of pine plantation and may be impacted from incompatible forestry practices (Robinson 2016).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	STONECUTTER CORPORATION	

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 16879

EO Number 61 **Parent EO Number** 99

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Old Source J.E. PADGETT (ASU DOCTORAL STUDENT) 3 FEBRUARY 2002 (FIELD SURVEY, FORM).

VERSION

Version Author Robinson **Version Date** 2016-04-15

Transcribed By JLA **Transcription Date** 2002-12-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4172
EO Number 62 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Richardson Creek, tributary about 0.9 mile up stream from its confluence with the Broad River (Sub EO of 099).

Directions Broad River: Richardson Creek, unnamed tributary on the east side of the creek, approximately 0.9 stream mile north of its confluence with the Broad River. This is a Sub EO of Parent EO 099 (Wichmann 2005). Along the north-facing ridge of a tributary to Richardson Creek west of SR 1115, 0.5 mile south of Riverside Church.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2002-02-02
EO Rank Comment
EO Data **2002:** Padgett observed 200-500 individual leaves or clumps occurring for 500 feet along the ridge on 21 April 2002 (Padgett 2002).

Source Feature Identifier 68196
Source Feature Locator Richardson Creek, east of McKinney Bridge Natural Area
Source Feature Descriptor 2012; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2002-04-21 **First Observation Date** 2002-02-02 **Last Observation Date** 2002-04-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description North-facing ridge above tributary, cut-over to north providing semi-open canopy. Associated species inlcude Quercus alba, Fagus grandifolia, Pinus virginiana, Prunus serotina, Smilax glauca, Polystichum acrostichoides, Quercus phellos, Botrychium dissectum, Hepatica americana, Quercus rubra.
Min. Elevation 656 **feet** **Max. Elevation** 689 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	DAN RIVER CORPORATION	

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 4172

EO Number 62 **Parent EO Number** 99

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Specimen

HERB.BOON 16384, J E PADGETT APRIL 21, 2002

Old Source J.E. Padgett (ASU doctoral student) 2 February 2002 (Field Survey, Form)

VERSION

Version Author Robinson **Version Date** 2015-11-17

Transcribed By JLA **Transcription Date** 2002-11-25

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12925
EO Number 63 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Hayes Lake (This is a sub EO of 099).

Directions Broad River: Hayes Lake. This is a sub EO of Parent EO 099 (Wichmann 2005). At the head of Hayes Lake, south of SR 1111 and northeast of the Broad River.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2001-07-31
EO Rank Comment
EO Data **2001:** Padgett observed 20-25 single leaves to large clumps occurring for 100 feet along the pond head and incoming stream; in leaf only on 31 July 2001 (Padgett 2001).

Source Feature Identifier 28545
Source Feature Locator Broad River: Hayes Lake
Source Feature Descriptor 2001; Padgett

Surveyors James Padgett, ASU **Survey Type** Quantitative ground survey
Survey Date 2001-07-31 **First Observation Date** 2001-07-31 **Last Observation Date** 2001-07-31
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Remains of Oak-Hickory Forest surrounded by pasture. associated species include Smilax rotundifolia, Quercus alba, Pinus virginiana, Polystichum acrostichoides, Calycanthus florida, Vitis rotundifolia, Lonicera japonica, Elephantopus tomentosus, and Ulmus alata (Padgett 2001).
Min. Elevation **feet** **Max. Elevation** 755 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Chapman Sod, (864) 472-0269, 300 Park Rd, Inman, SC 29349-1754	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 12925

EO Number 63 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Old Source J.E. Padgett (ASU doctoral student) 3 February 2002 (field survey, form)

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By JLA **Transcription Date** 2002-12-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 7387
EO Number 64

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Beaverdam Creek Natural Area

Survey Site
First Broad River: Beaverdam Creek Natural Area

Directions First Broad River: Beaverdam Creek Natural Area. Beaver Dam Creek, tributary north of SR 1148 near Flint Hill Church. BEAVERDAM CREEK NATURAL AREA: 2.6 AIR MILES SOUTHEAST OF BOILING SPRINGS, ON SOUTHWEST SIDE OF SHARP BEND IN BEAVERDAM CREEK, 0.6 MILE NORTHWEST OF JUNCTION OF FLINT HILL CHURCH RD.(SR 1148), CLAY RD. (SR 1218), AND BURKE RD. (SR 1148).

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 2002-06-11
EO Rank Comment Rank changed from a BC to a U-Unrankable based on the need for verification (Wichmann 2005). Based on rank specifications determined with USFWS.
EO Data ROUGH ESTIMATE OF UP TO 500 PLANTS IN FLOWER AND LEAF ON 11 JUNE 2002 (OAKLEY 2002).

Source Feature Identifier 7387
Source Feature Locator Beaverdam Creek Natural Area
Source Feature Descriptor 2002-06-11; Oakley

Surveyors Oakley **Survey Type** Qualitative ground survey
Survey Date 2002-06-11 **First Observation Date** 2002-06-11 **Last Observation Date** 2002-06-11
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** OCCURRENCE IN NEED OF VERIFICATION, FLOWER SIZE SLIGHTLY LARGE, CALYX TUBE OPENING EXCEEDS 5MM IN WIDTH (OAKLEY 2002).

DESCRIPTION

General Description Primarily south-facing slopes, Mesic Mixed Hardwood Forest and Kalmia bluff (Oakley 2002).
Min. Elevation 660 **feet** **Max. Elevation** 700 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** EO is located within 2.0 kilometers of EO 297, but is not linked because this population has not been confirmed (Robinson 2015).
General Comments: Occurrence in need of verification, flower size slightly large, calyx tube opening exceeds 5mm in width (Oakley 2002).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	MYRTLE LEDBETTER	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 7387

EO Number 64

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

Old Source S. Oakley, 2002, site survey report, Beaverdam Creek natural area.

VERSION

Version Author	Robinson	**Version Date**	2015-11-17
Transcribed By	SCO	**Transcription Date**	2003-01-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10585
EO Number 69 **Parent EO Number** 97

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Sandy Run/Lovelace Natural Area

Survey Site
Broad River: Sandy Run/Lovlace Natural Area (Sub EO of EO 097)

Directions Catawba River: Sandy Run Creek, Sandy Run/Lovelace Natural Area: This is a sub EO of Parent EO 097 (Wichmann 2005). 1.7 air miles northwest of Boiling Springs, NC and 0.4 mile due west of the end of Lovelace Rd.(SR 1165), on the east side of Sandy Run (Oakley 2002).

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 2002-04-25
EO Rank Comment ID needs verification to be ranked (Robinson 2015).
EO Data Estimate of 100 plants in leaf and flower on 25 April (Oakley 2002).

Source Feature Identifier 49057
Source Feature Locator Lovelace
Source Feature Descriptor 2002; NCNHP

Surveyors Oakley **Survey Type** Qualitative ground survey
Survey Date 2002-04-25 **First Observation Date** 2002-04-25 **Last Observation Date** 2002-04-25
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** OCCURRENCE IN NEED OF VERIFICATION, CALYX TUBE OPENING EXCEEDS 5mm IN WIDTH (OAKLEY 2002).

DESCRIPTION

General Description Young-mature Dry-Mesic Oak--Hickory Forest on gentle north-facing slope with Liriodendron, Quercus alba, Q. rubra, Acer rubrum, Polystichum acrostichoides, Sanguinaria canadensis, Anisostichus capreolata, and others (Oakley 2002).
Min. Elevation 720 **feet** **Max. Elevation** 740 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments: Occurrence in need of verification, calyx tube opening exceeds 5mm in width (Oakley 2002).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	MYRTLE BEASON HEIRS	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10585

EO Number 69 **Parent EO Number** 97

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

Old Source S. Oakley, 2002, Site Survey Report: Sandy Run/Lovelace Natural Area.

VERSION

Version Author Robinson **Version Date** 2015-11-17

Transcribed By SCO **Transcription Date** 2003-01-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10584
EO Number 70

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lawndale

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hicks Hill Bluffs and Forests

Survey Site
First Broad River: Hicks Hill Bluffs and Forests

Directions First Broad River: Hicks Hill Bluffs and Forests: ca. 1.5 air miles northwest of Lawndale on the south side of two sharp bends in the First Broad River, 0.7 mile northeast and east-northeast of the junction of Hicks Hill Road (SR 1501) and Harris Creek Road (SR 1503).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-06-28
EO Rank Comment BASED ON RANK SPECIFICATIONS DETERMINED WITH USFWS.
EO Data Estimate of 100-200 plants, a few in very late flower, on 28 June (Oakley 2002).

Source Feature Identifier 10584
Source Feature Locator Hicks Hill Bluffs and Forest
Source Feature Descriptor 2002; Oakley

Surveyors Oakley **Survey Type** Qualitative ground survey
Survey Date 2002-06-28 **First Observation Date** 2002-06-28 **Last Observation Date** 2002-06-28
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Occurrence in need of verification, very late flower, calyx tube opening exceeds 5mm in width (Oakley 2002).

DESCRIPTION

General Description Steep, north-facing slope with mature mesic hardwood canopy; with diverse mesic hardwoods, Tsuga canadensis, Kalmia, Rhododendron maximum, sparse acidic herbs (Oakley 2002).
Min. Elevation 820 **feet** **Max. Elevation** 900 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments: OCCURRENCE IN NEED OF VERIFICATION, VERY LATE FLOWER, CALYX TUBE OPENING EXCEEDS 5mm IN WIDTH (OAKLEY 2002).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	JIM EAKER	145 Jim Eaker Road, Lawndale NC 28090

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 10584

EO Number 70

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

Old Source S. OAKLEY, 2002, SITE SURVEY REPORT: HICKS HILL BLUFFS AND FORESTS.

VERSION

Version Author Robinson **Version Date** 2015-10-21

Transcribed By SCO **Transcription Date** 2003-01-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3284
EO Number 71

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lawndale

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Knob Creek Natural Area

Survey Site
First Broad River: Knob Creek Natural Area

Directions First Broad River: Knob Creek natural area: about 1.8 air miles north of Lawndale on the east side of Knob Creek and 0.5 mile west of the junction of Bellwood-Lawndale Road (SR 1643) and Will Dixon Road (SR 1662).

SURVEY INFORMATION

EO Rank BC - Good or fair estimated viability **EO Rank Date** 2005-05-05
EO Rank Comment Rank was upgraded from a C to a BC based on rank specifications for the species; BC was chosen to reflect large (greater than 1 acre), high quality (SNHA) forest in which this EO occurs and to account for the fact that the number of clumps listed in EO data was estimated (Wichmann 2005). BASED ON RANK SPECIFICATIONS DETERMINED WITH USFWS.
EO Data 300 plants estimated by Padgett, 86 clumps over a small area counted by Franklin of which approximately 10% were flowering on 05 May 2005 (Padgett, Franklin and Wichmann 2005). S. Oakley estimted 300 plants in leaf and flower on 17 May 2002 (Oakley 2002).

Source Feature Identifier 3284
Source Feature Locator Knob Creek Natural Area
Source Feature Descriptor 2002-05-17; Oakley

Source Feature Identifier 28370
Source Feature Locator Knob Creek Natural Area
Source Feature Descriptor 2005-05-05; Franklin, Padgett, Wichmann

Source Feature Identifier 30705
Source Feature Locator Knob Creek natural area
Source Feature Descriptor 2005-05-05, Franklin, Padgett, Wichmann

Surveyors Shawn Oakley, NCNHP
James Padgett, NCNHP
Misty Franklin, NCNHP
Brenda Wichmann, NCNHP

Survey Type Qualitative ground survey

Survey Date 2005-05-05 **First Observation Date** 2002-05-17 **Last Observation Date** 2005-05-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Northern most portion of slope not fully explored; plants likely extend along length of the slope (Wichmann 2005).

DESCRIPTION

General Description The northern sub-population (on the west facing slope east of the sharp bend in the river) is in a more mature forest, with many large trees, including a sourwood > 18" dbh. Young to mature mesic hardwoods on moderate northwest facing slope with Liriodendron, Fagus, Acer rubrum, Halesia tetraptera, Polystichum acrostichoides, MItchella repens Maianthemum recemosum, Polygonatum biflorum, and others (Oakley 2002).
Min. Elevation 820 **feet** **Max. Elevation** 860 **feet**
EO Observed Area **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3284

EO Number 71

Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments: Identification confirmed; calyx tube openings measured 4-5 mm in the intact community and 6-7mm in the clearcut area (Franklin, Padgett, and Wichmann 2005). OCCURRENCE IN NEED OF VERIFICATION, CALYX TUBE OPENING EXCEEDS 5mm IN WIDTH (OAKLEY 2002).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	NOAH & MAZE WRIGHT	
Private individual	Don Dedmond	527 Belwood-Lawndale Rd; (704) 300-6968

Owner Comments Don Dedmond granted permission for NCNHP to visit and visited the site with Franklin, Padgett, and Wichmann on 5 May 2005.

Management Comments

Protection Comments During a site visit with one of the landowners, Don Dedmond, in 2005, Franklin and Padgett asked Mr. Dedmond if he thought about formally protecting the site. He indicated that he did not plan to develop the site and that he was interested in conservation, but that he was not interested in formal conservation agreements or in selling the land (Franklin 2005). Mr. Dedford owns the portion of the site that was not recently clearcut.

Additional Topics

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

Old Source S. OAKLEY, 2002, SITE SURVEY REPORT: HICKS HILL BLUFFS AND FORESTS.

VERSION

Version Author Robinson **Version Date** 2015-10-02

Transcribed By SCO **Transcription Date** 2003-01-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6780

EO Number 72 **Parent EO Number** 211

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
First Broad Hop-Hornbeam Natural Area

Survey Site
First Broad River: First Broad Hop-Hornbean Natural Area (Sub EO of EO 211)

Directions First Broad River: First Broad Hop-Hornbeam Natural Area: This is a sub EO of Parent EO 211 (Wichmann 2005). Approximately 2 air miles north of Shelby, on the east side of a bend in the First Broad River, ca. 0.4 air mile west and southwest of the junction of Lafayette St.(SR 1005) and Blackwood Rd.(SR 1840).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-04-26

EO Rank Comment Based on rank specifications determined with USFWS.

EO Data **2002:** Estimate of less than 100 plants on 26 April (Oakley 2002).

Source Feature Identifier 6780

Source Feature Locator First Broad Hop-Hornbeam Natural Area

Source Feature Descriptor 2002; NCNHP

Surveyors Oakley **Survey Type** Qualitative ground survey

Survey Date 2002-04-26 **First Observation Date** 2002-04-26 **Last Observation Date** 2002-04-26

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Slight slopes with young-mature, mesic hardwoods and Kalmia, with FAgus, Liriodendron, Quercus rubra, Ostrya, Rhododendron maximum and R. minus, Polystichum, Hexastylis arifolia (Oakley 2002).

Min. Elevation 760 **feet** **Max. Elevation** 760 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	BARB & EMILE GEBEL	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 6780

EO Number 72 **Parent EO Number** 211

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

Old Source S. Oakley, 2002, Site Survey Report: First Broad Hop-Hornbeam Natural Area.

VERSION

Version Author Amoroso **Version Date** 2015-10-15

Transcribed By SCO **Transcription Date** 2003-01-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13149

EO Number 73 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Middle Sandy Run Crk, E side of Crk extending N from Grog Creek (Sub EO of EO 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek, east side of creek extending north from its confluence with Grog Creek. This is a sub EO of principal EO 100 (Wichmann 2005). NC DOT Broad River Tract sites L and M; James Padgett's 2001 Site 9C (Wichmann 2005). Slopes and ravines along the east side of Sandy Run Creek beginning approximately 200 meters north of its confluence with Grog Creek and continuing north along the creek for approximately 1.2 Kilometers (Wichmann 2005, based on map). NC DOT Mitigation site [in part] primarily for R-2707, also known as the IP or Broad River Tract (HDR 2005). Broad River/Sandy Run Natural Areas (Sandy Run Bluff North Subsite): Located 1.8 air miles southwest of Boiling SpringS, NC on the east side of SandY Run north of its confluence with Grog Creek (Oakley 2002).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2012-03-15

EO Rank Comment EO rank changed from a B to an A based on EO rank specs for written for this species (Wichmann 2005). Based on rank specifications determined with USFWS.

EO Data 2012: 11,446 total plants: 3550 plants estimated at site L1, 1923 plants estimated at site L2, and 3302 plants estimated at Site II by NCDOT biologists on 10 April 2012. 2671 plants counted at site M by NCDOT biologists on 10-11 April 2012 (Bassette 2015).
2012: Site visited with USFWS, NCDOT , and ASU 15 March 2012 (Padgett 2012) -- Wagner et. al. observed over 1000 plants on 15 March 2012. Plants growing on top of rocks in very shallow soil (Wagner 2012).
2009: Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009).
2009: An additional 3,349 plants counted at site II of Broad River Tract on 20 and 21 April 2009 by NCDOT biologists (Bassette 2009). 3,920 observed by NC DOT personnel (Bassette 2003).
2001:Over 2000 estimated plants along steep north and northwest-facing slopes (Padgett 2001).Vigorous population estimated at 500-1000 plants in leaf and bud on 6 March (Oakley 2001).

Source Feature Identifier 30222
Source Feature Locator Broad River Tract; Sites L, M, L, and II
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 89591
Source Feature Locator Broad River Greenway Conservation Area, Sites L1, M, L2, and II.
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors Oakley
James Padgett, ASU
NC DOT Personnel
Matt Jones, Garner-Webb Univ. undergrad

Survey Type Qualitative ground survey

Survey Date 2012-04-11 **First Observation Date** 2001-03-06 **Last Observation Date** 2012-04-11

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 13149

EO Number 73 **Parent EO Number** 100

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Hardwoods majority (Bassette 2003). West and northwest-facing steep slopes, Piedmont/Coastal Plain Heath Bluff with dense ericaceous shrubs; with Quercus spp., Kalmia, Smilax rotundifolia, Galax, etc. (Oakley 2001).

Min. Elevation 680 **feet** **Max. Elevation** 800 **feet**

EO Observed Area 25.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Private individual	MR. WHITFIELD	
State government	NC DOT	

Owner Comments "Ownership of the Broad River Tract will ultimately be conveyed to Cleveland County, with the Broad River Greenway Association acting as the County's steward to the property" (Bassette 2003).

Management Comments Upslope extent of population ends where managed pine plantation begins (Oakley 2001).

Protection Comments Occurrence is contained within NC DOT mitigation site, the Broad River Tract; see reference U03BAS01NCUS (Wichmann 2005).

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

Old Source S. Oakley, March 5-6, 2001, Site Survey Report: Broad River/Sandy Run Natural Areas (Broad River at Sandy Run Subsite).

VERSION

Version Author Amoroso **Version Date** 2016-04-21

Transcribed By JTF **Transcription Date** 2003-02-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 1667

EO Number 74 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Lower Sandy Run CK, N of Powerline; DOT sites FF and GG (Sub EO of EO 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Lower Sandy Run Creek, north of Powerline Right-of-Way; NC DOT Broad River Tract sites FF and GG; James Padgett's 2001 Site I and J. This is a sub EO of Parent EO 100 (Wichmann 2005). Broad River/Sandy Run Natural Areas(Broad River at Sandy Run subsite): 2.5 air miles southwest of Boiling Springs, east side of Sandy Run, 0.4 air mile north of the confluence of Sandy Run and the Broad River, on north side of a powerline right-of-way;north-facing slope between R-O-W and prominent bend in Sandy Run (Oakley 2001).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2008-04

EO Rank Comment EO rank based on EO rank specs written for this species and most recent EO data (Wichmann 2005). Based on rank specifications determined with USFWS.

EO Data
2012: 675 total: 429 plants counted at site FF and 246 counted at site GG by NCDOT biologists (Bassette 2015).
2008: 490 plants counted by NCDOT biologists at sites FF and GG in April 2008 (Bassette 2008).
2003: 457 observed by NC DOT (Bassette 2003).
2001: Estimate of 100-200 plants in leaf and bud on 5 March (Oakley 2001).

Source Feature Identifier 30223
Source Feature Locator Broad River Tract Site FF, Sandy Run Creek Site J
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30224
Source Feature Locator Broad River Tract Site GG, Sandy Run Creek
Source Feature Descriptor 2003; NCDOT contractor

Source Feature Identifier 89584
Source Feature Locator Broad River Greenway Conservation Area, Site FF
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89585
Source Feature Locator Broad River Greenway Conservation Area, Site GG
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors Oakley
NC DOT Personnel

Survey Type Qualitative ground survey

Survey Date 2012-04-12 **First Observation Date** 2001-03-05 **Last Observation Date** 2012-04-12

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 1667

EO Number 74 **Parent EO Number** 100

DESCRIPTION

General Description Mature Mesic Mixed Hardwood Forest and Piedmont/Coastal Plain HEATH BLUFF communities,north-facing slope between R-O-W and prominent bend in Sandy Run; with Fagus, polystichum, Hepatica, etc. and with Quercus spp., Kalmia, etc.(Oakley 2001).

Min. Elevation 660 **feet** **Max. Elevation** 720 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Private individual	MR. WHITFIELD	
State government	NC DOT	

Owner Comments

Management Comments

Protection Comments NC DOT mitigation site; see Reference U05HDR01NCUS (Wichmann 2005).

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

Old Source S. Oakley, March 5-6, 2001, Site Survey Report: Broad River/Sandy Run Natural Areas (Broad River at Sandy Run subsite).

VERSION

Version Author Amoroso **Version Date** 2016-04-18

Transcribed By JTF **Transcription Date** 2003-02-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14124
EO Number 75 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Brice Rare Plant Site

Survey Site
Horsehead Coorporation (Sub EO of EO 99)
Broad River: Brice Rare Plant Site (Sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Monitoring data below is a subset of monitoring data for Parent EO 99 (Padgett 2013). Site visited and the plants counted in the three permeant monitoring plots by Padgett and Israel on 17 July 2013. Total number of plants counted was 1748 (Padgett 2013)Site renamed and three permanent plots installed and the plant counted. A total of 759 plants were counted in the three monitoring plots on 2012-09-06 (Padgett 2013). Broad River: Brice Rare Plant Site. This is a sub EO of Principal EO 099. This sub EO is comprised of 3 sub-occurrences located along the 3 unnamed tributaries contained within the Brice Rare Plant Site: Sub-EO (A) Western-most tributary; Sub-EO (B) Middle tributary; Sub-EO (C) Eastern-most tributary. See map for details (Wichmann 2005). Approx. 3.5 miles south-southeast of Harris, NC along the southern part of Rutherford County just across the Broad River. Site is bisected by CSX railroad. (Padgett 2003).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2013-07-17
EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).
EO Data **2013:** 748 plants counted in permanent monitoring plots by James Padgett on 17 July 2013, for an estimate of 7000+ plants for the whole EO (Padgett 2013).
2004: Site unchanged since visit the previous year (Padgett 2004).
2003: Estimated 700 to 1000 single leaves and clumps in 3 subpopulations along streams. In leaf, bud and flower on 14 March (Padgett 2003).

Source Feature Identifier 68509
Source Feature Locator Brice Rare Plant Site
Source Feature Descriptor Padgett 2012

Source Feature Identifier 88451
Source Feature Locator Brice Rare Plant Site; Horsehead Corporation, EO 75 plots
Source Feature Descriptor Padgett EO 75 plots

Surveyors James Padgett, ASU (2003); NHP (2004) **Survey Type** Qualitative ground survey
Survey Date 2013-07-17 **First Observation Date** 2003-03-14 **Last Observation Date** 2013-07-17
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak--Hickory Forest with a canopy dominated by Quercus alba, Quercus montana, Quercus coccinea, Quercus rubra, Liriodendron tulipifera, and Acer rubrum. Kalmia is thick along the slopes in some locations. Other associated species include Chimaphilia maculata, Polystichim acrostichoides, and Goodyera pubescens (Padgett 2004).
Min. Elevation 600 **feet** **Max. Elevation** 880 **feet**
EO Observed Area 40.00 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 14124

EO Number 75 **Parent EO Number** 99

Rep Accuracy Medium

Separation Comments All sub-EOs area located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Horsehead Metal Products: contact James Harris, jharris@horsehead.net	2012, 2015, & 2016, responded with permission to survey

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
F13NHP01NCUS	NCNHP Staff, 2013 Field Survey
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Old Source James Padgett (ASU) 14 March 2003 (field survey, form)

VERSION

Version Author Amoroso **Version Date** 2016-03-17

Transcribed By JLA **Transcription Date** 2003-03-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3553

EO Number 76 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Big Horse Creek Rare Plant Site

Survey Site
Broad River: Big Horse Creek, Parris Tract (north) (Sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Big Horse Creek, Parris Tract (north). This is a sub EO of parent EO 099 (Wichmann 2005). Along unnamed tributaries to Big Horse Creek. The primary occurrence (A) occurs on the east [and west] side of US Highway 221 approximately 1.2 miles south of the Broad River along an unammed tributary to Big Horse Creek, approximately 2000' south of the intersection of US 221 and SR 1113 (Hick's Crossroad); east and west of US 221 (Renninger 2003).

SURVEY INFORMATION

EO Rank BC - Good or fair estimated viability **EO Rank Date** 2015-05-19

EO Rank Comment EO rank based on EO rank specs for this species and most recent EO data (Wichmann 2005).

EO Data **2015**: 3011 plants counted on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres (Padgett and Feldman 2015).**2014**: Padgett counted 3094 plants within monitoring plots for principal EO 99 on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area (Padgett 2014). **2013**: Site visited and population delineated on 14 June 2012 by Padgett and Gadd (Padgett 2013).**2012**: Wagner et. al. counted about 35 plants on 12 March 2012. Most plants on site budding but not yet in full bloom. Plants close to creek bed heavily impacted by siltation from 221 widening project. Plants up slope not as heavily impacted. Last count of plants before highway construction was 130 plants. (Wagner 2012).**2010**: 4 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).**2007**: 135 clumps counted and observed in March and April 2005 by H W Hochner (Padgett 2007).**2004**: A: (primary site) 200-300 rosettes occurring on both north and south sides of the drainage (the majority of the population is on the north side). The population covers approximately 4100 SQM. Approximately one half of the individuals seen were flowering. B [see EO 172]:(secondary site) 9 rosettes occurring on south side of the drainage. The population covers approximately 100 SQM. 5 rosettes were flowering (M. Franklin and J. Padgett 2004).**2003**: A: Approximately 20 clumps (10 on each side of US 221), in leaf and flower; seedlings and vegatative evidence of reproduction; a few plants seen on south-facing bank (Renninger 2003). B[see EO 172]: Approxitately 75-100 clumps in 0.232 acres, in leaf and flower; seedlings and colonial vegetative evidence of reproduction;

Source Feature Identifier 68193
Source Feature Locator Big Horse Creek Rare Plant Site
Source Feature Descriptor Padgett 2012

Surveyors Heather Renninger, H.W. Lochner
Emily Fentress, H.W. Lochner
Misty Franklin, NHP
James Padgett, NHP
Laura Gadd, NHP
Maxwell Feldman, NHP intern
Jackie Wagner, ASU

Survey Type Qualitative ground survey

Survey Date 2015-05-19 **First Observation Date** 2004-05-03 **Last Observation Date** 2015-05-19

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3553

EO Number 76 **Parent EO Number** 99

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description The occurrence is within a Dry Oak-Hickory Forest of high quality along the mid- to lower slopes of two unnamed drainages. The topography is concave, moisture is moist to dry (probably varying seasonally) and site is shaded. Associated species include Quercus alba, Q. phellos, Carya glabra, C. tomentosa, Acer rubrum, Cornus florida, Castanea pumila, Kalmia latifolia, Rhododendron sp., Sassafras albidum, Mitchella repens, Uvularia sp., Epigea repens, Viola sp., Goodyera pubescens, Sanguinaria canadense, Lonicera japonica, Lonicera sempervirens, Osmunda cinnamomea, Asplenium platyneuron, Polystichum acrostichoides, Carex sp., and Panicum sp. (M. Franklin and J. Padgett 2004). [Sub-occurrence A], Mesic Mixed hardwood grading into Dry Mesic Oak Hickory, medium quality to low quality. [Sub-occurrence B], Mesic Mixed Hardwood along mid- to lower slope; Pacolet Soils; medium quality; NE to E facing slopes (mainly); Topoography flat and convex; Moisture is moist to dry; Site is filtered sun/shade; Associated species include: Cary, Liriodendron, Quercus alba, Kalmia, Carpinus, cinnamon fern (Renninger 2003).

Min. Elevation 720 **feet** **Max. Elevation** 790 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments Located approximately 0.1 mile north of sub EO 172; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Flowers range in color from reddish green to white (Padgett, 2004).

OWNERSHIP

Managed Areas Parris Heartleaf Registered Heritage Area

Owner Type	Owner Name	Notes
Private individual	Joyce and Howard Parris, 7061 US Highway 221 S., Mooresboro, NC 28814	2012, responded with permission to survey; 2015, did not respond

Owner Comments A: Joyce and Howard Parris, 7061 US Highway 221 S., Mooresboro, NC 28814, (828) 248-2464. B: Mike Parris.
Reminder postcard sent 2016.

Management Comments

Protection Comments Site should be protected from impending road widening project (US 221 scheduled for 2005-2006) and installation of water utility line. The owners have expressed an interest in protecting the area through Registry or Dedication. Ann Prince (NCHP) will follow up with owners (Franklin 2004).

Additional Topics 3 plants and 0.010 acres expected to be directly impacted and 32 plants and 0.126 acres expected to be indirectly impacted by this road project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 3553

EO Number 76 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.
F03REN01NCUS	Renninger, H. 2003. Field survey.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Specimen

A living specimen was donated to the NC Botanical Garden (Chapel Hill) for display and education (Franklin 2004).

Old Source C. McRae (S& ME), C. Wells (USFWS), J. Padgett, and M. Franklin, 03 May 2004 (water utility line survey).

VERSION

Version Author Amoroso **Version Date** 2016-03-09

Transcribed By MAF **Transcription Date** 2004-05-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20238
EO Number 77

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Granite Falls

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Little Gunpowder Creek Rare Plant Site 2

Survey Site
Catawba River: Gunpowder Creek, tributary approximately 3 miles N of Granite Falls.
NCDOT TIP: B-3126 at Gunpowder creek
Possible hybrid

Directions Catawba River: Gunpowder Creek, unnamed tributary approximately 3 miles north of Granite Falls. 1.9 miles east of US321 on SR-1718 (Deal Mill Road) at three locations: A) on the west side of the road along unnamed tributary; B) on the north side of the Gunpower Creek bridge and west of SR-1718; C) on the north side of the Gunpower Creek bridge and east of SR-1718. Plants historically located along road south of the bridge but these were extirpated during the bridge replacement; see Beuregard (2000) for historical extent at this location.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2007
EO Rank Comment EOR may need to be downranked after DOT impacts.
EO Data 2013: 617 plants counted on 15 May (NCDOT 2013).
2013-2012: Plants present in 2013 and 2012 at locations A, B, and C as indicated on map provided by NCDOT but made by Stafford; no quantitative data on the number of plants was included (NCDOT 2014).
2011: 731 plants counted on 3 November 2011 by NCDOT
2007: 128 clusters observed by NCDOT in 2007 (NCDOT 2009).
2006: 334 plants are within construction project area (TIP: B-3126); 184 plants are expected to be impacted by construction activites in 2006; 160 plants are to be protected on-site in an area where the acreage needs to be verified (Wells 2006).
2005: 353 individual plants counted by NCDOT staff in April 2005 (HDR and HARP personnel 2005). Site visited with NC-DOT and saw roughly 50-75 plants. The timing was a bit early and the population is questionable as it's flower size and plant morphology favor H. heterophylla rather than H. naniflora. Site should be revisited to confirm as NC-DOT is planning bridge replacment here soon (Padgett 2005).
2003: NCDOT construction impacts expected according to Bassette in 2003 (Bassette 2003).
2000: 50 individual plants, stems and leaves over approximately 0.4 acres observed by Beauregard on 12 April 2000 (Beauregard 2000).

Source Feature Identifier 79963
Source Feature Locator Unnamed trib of Gunpower Creek, west of SR-1718, south of Gunpowder Creek
Source Feature Descriptor Subpop A: 2013 extent

Source Feature Identifier 79964
Source Feature Locator Unnamed trib of Gunpower Creek, west of SR-1718, north of Gunpowder Creek
Source Feature Descriptor Subpop B: 2013 extent

Source Feature Identifier 79965
Source Feature Locator Unnamed trib of Gunpower Creek, east of SR-1718, north of Gunpowder Creek
Source Feature Descriptor Subpop C: 2013 extent

Surveyors Rachelle Beauregard, NCDOT
James Padgett, NHP
Tim Bassette, NC Department of Transportation
Pete Stafford, RKK (environmental consulting firm)

Survey Type Qualitative ground survey

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20238

EO Number 77

Survey Date 2013-05-15 **First Observation Date** 2000-04-12 **Last Observation Date** 2013-05-15

Data Sensitive Element N **Comments**

Monitoring Needs Comments NCDOT has committed to permanent protection and monitoring of at least 160 plants anticipated to remain (after construction) within the currently owned or expanded (through additional purchase) ROW (2006 Ammendment to the 2003 Biological Assessment, on file with USFWS Asheville Office) [C. Wells, 8/2006]. Site was subject to consultation with USFWS (worst-case scenario assumed, in that all Hexastylis plants were H. naniflora). If impacts exceed those anticipated in the 2006 Ammended Biological Opinion issued by FWS, consultation should be re-initiated (ASNC log no. 4-2-03-415, on file with USFWS Asheville Office) [C. Wells, 8/2006].

Research Needs Comments Future surveys should be conducted to assess extent of impacts due to NCDOT's bridge construction. [NCDOT committed to monitoring of this population in their 2006 Ammended Biological Assessment; C. Wells, 8/2006]

Research Needs Comments

Additional Inventory Needed Y **Comments** Population is questionable as it's flower size and plant morphology favor H. heterophylla rather than H. naniflora; site should be revisited to confirm as NC-DOT is planning bridge replacment here soon (Padgett 2005). Inventory should be contucted after bridge replacement to assess impacts (Wichmann 2005).

DESCRIPTION

General Description Mesic Oak-Hickory Forest; medium quality. Forest cover types are fairly similar amongst the three subpopulations. The canopy is dominated by Quercus alba, Q. rubra, Carya glabra, Acer rubrum, Prunus serotina, Liriodendron tulipifera, and Pinus strobus. The understory consists of Carpinus caroliniana, Oxydendrum arboretum, Acer rubrum, Cornus florida, Ilex opaca. The shrub layer includes Kalmia latifolia, Leucothoe axillaris var. editorium, and Euonymus americanus. Woody vines included Bignonia capreolata, Vitis rotundifolia, and Toxicodendron radicans. The herb layer is sparse to moderately dense and includes Hexastylis naniflora, Goodyera pubescens, Aplectrum hyemale, Mitchella repens, Chimaphila maculata, Polystichum acrostichoides, Tiarella sp., and Desmodium nudiflorum (NCDOT 2011). A pasture runs along the north and south banks of creek and a side tributary along road; pasture south of creek recently logged, thick brush, grades into a more mature forest, plants occur under thick brush; pasture north of Creek thick with Ilex opaca and lacking other understory shrubs due to grazing, plants occur in areas safe from cattle, tree bases and along tributary. This population occurs with the following associated species: Betula nigra, Quercus alba, Prunus serotina, Carya glabra, Acer rubrum, Carpinus caroliniana, Leucothoe axillaris var. editorium, Vitis rotundifolia and Mitchella repens (Padgett 2005). Piedmont/Low Mountain Alluvial Forests with Betula nigra, Quercus alba, Prunus serotina, Carya glabra, Acer rubrum, Carpinus caroliniana, Leucothoe axillaris var editorium, Vitis rotundifola, Mitchella repens, Tiarella sp. (Beauregard 2000).

Min. Elevation 1,170 **feet** **Max. Elevation** 1,180 **feet**

EO Observed Area 0.40 **acres**

Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments: Invasive species noted & degree of threat from invasive species: Lonicera japonica is prevalent in subpop A. Some Ligustrum sinense is present in subpopulation A. (NCDOT 2011).

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Private individual		

Owner Comments

Management Comments

Protection Comments The population on the Southern bank of Gunpowder Creek is expected to be adversely impacted by proposed NCDOT bridge construction. NCDOT has purchased additional property as a right of way easement to protect the remaining population of this element occurrence (Padgett 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20238

EO Number 77

Additional Topics "B-3126 (EO 77) in Caldwell County was recently inventoried by NCDOT staff due to changes in project alignment. A total of 353 individual plants were counted in April 2005 and proposed project impacts have not yet been determined" (HDR personnel 2005). "B-3126...construction impacts to DFHL are expected if the bridge is replaced on a new alignment to the west of the existing bridge. Consequently, a Biological Conclusion of May Effect is likely to Adversely Affect was rendered for this project. The October 2001 review of the proposed project revealed no changes in land use. Furthermore, indirect or cumulative impacts to DFHL as a result of other development were not observed (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
F00CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.

Old Source Rare Plant Field Survey Form (2000-04-12 Beauregard NCDOT)

VERSION

Version Author Amoroso **Version Date** 2016-07-13

Transcribed By CDD **Transcription Date** 2004-07-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20242

EO Number 79 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Richardson Creek, Riverside Church (This is a sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Richardson Creek, Riverside Church. This is a sub EO of parent EO 099 (Wichmann 2005). Off of SR 1115 south of Harris approximately 0.3 mile behind Riverside Church on north facing slope of unnamed tributary of Richardson Creek (Padgett 2001).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2001-04-01

EO Rank Comment EO rank based on EO rank specs for this species and most recent EO data (Wichmann 2005).

EO Data **2012:** Site visited and remapped in May of 2012 (Padgett 2013).
2001: 200-300 clumps in leaf and flower along 100 yards of stream; high numbers of seedlings and flowering individuals (Padgett 2001).

Source Feature Identifier 68700
Source Feature Locator east of McKinney Bridge Natural Area
Source Feature Descriptor 2012; Padgett

Surveyors James Padgett, ASU
James Padgett, NHP

Survey Type Quantitative ground survey

Survey Date 2012-05 **First Observation Date** 2001-04-01 **Last Observation Date** 2012-05

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic hardwood cove and cut over; slope is very rocky in places; associated species include: Sanguinaria canadensis, Quercus alba, Polystichum acrostichoides, and Hepatica americana. This area was but over within the past five years with parts of the EO effected. Numerous seedlings are present. The cutover sees to be a benefit to this population (Padgett 2001).

Min. Elevation 720 **feet** **Max. Elevation** 730 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments Located near sub EO 055; All sub EOs are located within 1.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20242

EO Number 79 **Parent EO Number** 99

Owner Type	Owner Name	Notes
Private individual	William Lowe, lowerun@att net	2012 permission granted
Private individual	Jerry Laughter, 828 453 7702	2012 no response

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Specimen

HERB.BOON 15994, J E PADGETT APRIL 04, 2001

HERB.GWC 06044, J E PADGETT APRIL 04, 2001

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By CDD **Transcription Date** 2004-07-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20243
EO Number 80 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 and S of SR 2125 (sub of 247)

Directions Broad River: Floyds Creek near Harris, unnamed triburary west of US 221 and south of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). 0.5 miles east of Harris. The site is located 0.1 miles south of SR 2125 and 0.1 miles East of the bridge over Floyds Creek. The population is along a ridge on the South side of an unnamed tributary to Floyds Creek.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-03-13
EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).
EO Data **2013:** Site visited in In July 2012 and remapped, no plant counts made in 2012 (Padgett 2012).
2003: Estimate 50 individual plants seen (Padgett 2003).

Source Feature Identifier 24870
Source Feature Locator Broad River: Floyds Creek near Harris
Source Feature Descriptor 2013; NCNHP

Surveyors James Padgett, ASU
James Padgett, NHP

Survey Type Quantitative ground survey

Survey Date 2012-07 **First Observation Date** 2003-03-13 **Last Observation Date** 2012-07

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description This site has been described as a Mixed Hardwood community along the mid-slope of the topographic position. The population also exists along a moist to dry moisture regime in a moderately filtered light intensity. Associated species found at survey site include: Quercus spp., Acer rubrum, Polystichum acrostichoides, Lonicera japonica, Smilax glauca and Pinus virginiana (Padgett 2003).

Min. Elevation 780 **feet** **Max. Elevation** 800 **feet**
EO Observed Area 0.50 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	Private	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20243

EO Number 80 **Parent EO Number** 247

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

VERSION

Version Author Robinson **Version Date** 2016-08-24

Transcribed By CDD **Transcription Date** 2004-07-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20246
EO Number 83 **Parent EO Number** 117

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
First Broad River: Knob Creek: Leeman Gap (south) (Sub EO of EO 117)

Directions First Broad River: Knob Creek, Leeman Gap (south). This is a Sub EO of ParentEO 117 (Wichmann 2005). "Off Leman Gap Road to Dirty Ankle Road approximately 1.0 mile to where creek runs along side of road across creek on noth facing slope (Padgett 2003).

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 2003-03-21
EO Rank Comment EO ID not confirmed (Wichmann 2005).
EO Data **2003:** Estimated 100 plants seen in bud (Padgett 2003).

Source Feature Identifier 24873
Source Feature Locator First Broad River: Knob Creek, Leeman Gap (south)
Source Feature Descriptor 2003; NCNHP

Surveyors James Padgett, NHP **Survey Type** Qualitative ground survey
Survey Date 2003-03-21 **First Observation Date** 2003-03-21 **Last Observation Date** 2003-03-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** This EO needs to be re-examined and verified (Padgett 2005).

DESCRIPTION

General Description The element occurrence is along the mid-lower slope of the topographic position. The site also occurs in a moist to dry moisture regime in a moderately filtered to shady light condition. Associated species found at this survey site include: Kalmia latifolia, Quercus montana, Quercus alba, Tipularia discolor and Polystichum acrostichoides (Padgett 2003).
Min. Elevation 1,200 **feet** **Max. Elevation** 1,220 **feet**
EO Observed Area 0.60 **acres**
Rep Accuracy High **Separation Comments** Near EO 083; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown		

Owner Comments
Management Comments
Protection Comments EO ID not confirmed (Wichmann 2005).
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20246

EO Number 83 **Parent EO Number** 117

DOCUMENTATION

Reference Code	Citation
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey

VERSION

Version Author Amoroso **Version Date** 2015-10-14

Transcribed By CDD **Transcription Date** 2004-07-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20247
EO Number 84 **Parent EO Number** 117

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)
Cleveland (NC)

Watershed
03050102 - South Fork Catawba
03050105 - Upper Broad

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
First Broad River: Knob Creek, Leeman Gap (north) (Sub EO of EO 117)

Directions First Broad River: Knob Creek, Leeman Gap (north). This is a Sub EO of Parent EO 117 (Wichman 2005)."Along Leman Gap Road coming out from Leman Gap in Burke County just inside Cleveland County on left hand side of road in steep ravine along small stream" (Padgett 2003).

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 2003-03-21
EO Rank Comment EO ID not confirmed (Wichmann 2005).
EO Data **2003:** Estimated between 100 to 200 plants seen in bud (Padgett 2003).

Source Feature Identifier 30437
Source Feature Locator First Broad River: Knob Creek, Leeman Gap (north)
Source Feature Descriptor 2003; NCNHP

Surveyors James Padgett, NHP **Survey Type** Qualitative ground survey
Survey Date 2003-03-21 **First Observation Date** 2003-03-21 **Last Observation Date** 2003-03-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** This EO needs to be re-examined and verified (Padgett 2005).

DESCRIPTION

General Description Associated species found at this survey site include: Pinus strobus, Smilax spp., Vaccinium spp., Prunus serotina and Polystichum acrostichoides (Padgett 2003).
Min. Elevation 1,180 **feet** **Max. Elevation** 1,200 **feet**
EO Observed Area 0.50 **acres**
Rep Accuracy Medium **Separation Comments** Near EO 083; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown		

Owner Comments
Management Comments
Protection Comments EO ID not confirmed (Wichmann 2005).
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20247

EO Number 84 **Parent EO Number** 117

DOCUMENTATION

Reference Code	Citation
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey

VERSION

Version Author Amoroso **Version Date** 2015-10-14

Transcribed By CDD **Transcription Date** 2004-07-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20249
EO Number 85

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Cherryville
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: northeast of SR 1903
NCDOT TIP: R-2824

Directions Buffalo Creek, northeast of SR 1903: Northeast of Shelby, on SR 1906 (Costner Road) over Buffalo Creek. Population is NW of Road (Underwood 2004). 1.3 miles southeast of Beam Mill. From Shelby, NC drive on State Route 18 North to State Route 1906 East for 1.3 miles over Buffalo Creek. The element occurrence is located on the North side of State Route 1906 along the bluff of Buffalo Creek (Dollison 2004).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-Spr
EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).
EO Data in the spring of 2005, HDR estimated 267 plants based on counts from 8 sample plots, 1/100 acre in size, established over approximately 0.45 acres (HDR 2005). Underwood counted eight individuals on 29 April 2004, defined as several stems with leaves and flowers (Underwood 2004).

Source Feature Identifier 24877
Source Feature Locator Buffalo Creek, northeast of SR 1903
Source Feature Descriptor 2004; Underwood

Source Feature Identifier 28168
Source Feature Locator Buffalo Creek, northeast of SR 1903
Source Feature Descriptor 2005; HDR

Surveyors David Bailey
HDR personnel
HARP personnel
Chris Underwood, NC DOT

Survey Type Quantitative ground survey

Survey Date 2005-Spring **First Observation Date** 2004-04-29 **Last Observation Date** 2005-Spring
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description ".. northwest facing slope...consists primarily of Mesic Mixed Hardwood Forest...The population at this site is found on a moist, very steep slope dominated by mixed hardwoods...Dominant vegetation includes American beech, sourwood, white oak, American hornbeam (*Carpinus caroliniana*), chestnut oak, and sweetgum (*Liquidambar styraciflua*). The herb, shrub, and vine layers include hepatica (*Hepatica spp*.), Christmas fern (*Polystichum acrostichoides)*, privet (*Ligustrum* spp.), bloodroot *(Sanguinaria canadensis)*, and sweetshrub (*Calycanthus floridus)* (HDR 2005). "Upland Hardwoods, on Face/crest of slope, fairly dry"(Underwood 2004).
Min. Elevation 795 **feet** **Max. Elevation** 870 **feet**
EO Observed Area 0.45 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20249

EO Number 85

Rep Accuracy High

Separation Comments Parent EO 232 occurs 2.1 km to the south within the Buffalo Creek Rare Plant Site.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown		

Owner Comments

Management Comments

Protection Comments

Additional Topics EO is associated with NC DOT project B-3828, see U05HDR01NCUS (Wichmann 2005). Zero impact planned (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.

VERSION

Version Author Wichmann **Version Date** 2005-06-14

Transcribed By CDD **Transcription Date** 2004-07-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20251
EO Number 87

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Lower Creek: Miller Creek, headwaters near Martin Marietta Materials

Directions Catawba River: Lower Creek: Headwaters of Miller Creek, near Martin Marietta Materials; 2 miles south of Lenior. Travel South on US 321A to Connelly Springs Road, then 2.0 miles South. Martin Marietta Materials service entrance is located on the west side of Connelly Springs Road at junction of Colliers Church. The occurrence is located 0.2 miles North of end of Martin Marietta Materials service road along unnamed tributary of Miller's Creek.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2011-11-04
EO Rank Comment EO rank based on EO rank specs for the species and most recent EO data (Wichmann 2005).
EO Data 55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park); relocation occurred to permit expansion at the quarry [see 'Additonal Topics']; a few plants were left at the site but, if the quarry is expanded, they will be extirpated (HARP 2011, Matthews 2012). 95 individual plants total: 42 vegetative and 53 in flower or bud (Matthews 2004).

Source Feature Identifier 24879
Source Feature Locator Catawba River: Lower Creek: Headwaters of Miller Creek, near Martin Marietta Materials
Source Feature Descriptor 2004; Matthews

Surveyors Jim Matthews, UNC-C Department of Biology, HARP
David Campbell, HARP
Survey Type Quantitative ground survey
Survey Date 2011-11-04 **First Observation Date** 2004-03-25 **Last Observation Date** 2011-11-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description This population occurs with associated species of Quercus prinus, Kalmia latifolia, Quercus rubra and Fagus grandifolia (Matthews 2004).
Min. Elevation 1,180 **feet** **Max. Elevation** 1,200 **feet**
EO Observed Area 0.05 **acres**
Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments: Relocation of plants from this occurrence occurred to permit expansion at the quary. At the request of Martin Marietta, negotiations were held with USFWS regarding the potential for transplanting the population. This action was approved verbally by USFWS on 23 May 2011 (HARP 2011).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Martin Marietta Materials	Brian North, PE (704) 409-1475

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20251

EO Number 87

Management Comments

Protection Comments Site is being considered for future expansion of quarry (Matthews 2004).

Additional Topics

DOCUMENTATION

Reference Code	Citation
A04MAT01NCUS	Matthews, J. 2004. North Carolina Natural Heritage Program Endangered and Rare Plant Field Survey Form March 25 2004.
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F12CON01NCUS	2012. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.

Specimen

Hexastylis naniflora (2004-03-25 UNCC Herbarium)

VERSION

Version Author	Mason	**Version Date**	2012-04-02
Transcribed By	CDD	**Transcription Date**	2004-07-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20254
EO Number 89

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Jacob Fork, Whitener Creek south of Valdese

Directions South Fork Catawba River: Jacob Fork, Whitener Creek, 7.4 miles south of Valdese. Travel South on State Route 10 for 9.3 miles to Sugarloaf Road. Travel East on Sugarloaf Road for 1.7 miles and turn south on Corn Hill Road (State Route 1303). Travel 0.4 miles to second crossing of Whitener Creek. The site is located on the East side of State Route 1303 along 300 yards of the Northern bluff of Whitener Creek (Padgett 2003).

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 2003-03-21
EO Rank Comment ID not confirmed (Wichmann 2005).
EO Data Estimated 200 plants seen in bud (Padgett 2003).

Source Feature Identifier 24883
Source Feature Locator South Fork Catawba River: Jacob Fork, Whitener Creek
Source Feature Descriptor 2003; NCNHP

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2003-03-21 **First Observation Date** 2003-03-21 **Last Observation Date** 2003-03-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** ID not confirmed (Wichmann 2005).

DESCRIPTION

General Description The population is associated with the following species: Kalmia latifolia, Ilex opaca, Polystichum acrostichoides, Pinus strobus, Pinus virginiana, Prunus serotina, Epigaea repens and Galax spp. (Padgett 2003).
Min. Elevation 1,240 **feet** **Max. Elevation** 1,260 **feet**
EO Observed Area 0.30 **acres**
Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown		

Owner Comments
Management Comments
Protection Comments ID not confirmed (Wichmann 2005).
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20254
EO Number 89

DOCUMENTATION

Reference Code	Citation
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey

VERSION

Version Author	Wichmann	**Version Date**	2004-11-30
Transcribed By	CDD	**Transcription Date**	2004-07-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20255
EO Number 90 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Richardson Creek, tributary near SR 1122 (this is a sub EO of 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Richardson Creek, unnamed tributary near SR 1122: This is a sub EO of parent EO 099 (Wichmann 2005). Approximately 1 mile southwest of Harris on SR 1111. 0.9 miles South of SR 1122. 0.5 miles West of State Route 1122 to unnamed branch of Richardsons Creek. The element occurrence is located 0.2 miles South of SR 1122 downstream of unnamed branch along the North facing slope.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-03-02
EO Rank Comment EO rank based on EO rank specs for this species and most current EO data (Wichmann 20005).
EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2003: Estimated between 100-200 individual plants along small stream and lower slopes (Padgett 2003).

Source Feature Identifier 28929
Source Feature Locator Broad River: Richardson Creek, unnamed tributary near SR 1122
Source Feature Descriptor 2003; Padgett

Surveyors Padgett, nhp **Survey Type** Qualitative ground survey
Survey Date 2003-03-02 **First Observation Date** 2003-03-02 **Last Observation Date** 2003-03-02
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description This population occurs with the following associated species: Quercus alba, Acer rubrum, Kalmia latifolia, Polystichum acrostichoides and Tipularia discolor (Padgett 2003).
Min. Elevation 780 **feet** **Max. Elevation** 830 **feet**
EO Observed Area 0.95 **acres**
Rep Accuracy High **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	PRIVATE	
Private individual	Slawson	2012 no response
Private individual	V.M. Henson (2012), Silver Spring LLC (2014)	2012 no response

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20255

EO Number 90 **Parent EO Number** 99

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By CDD **Transcription Date** 2004-07-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20256
EO Number 91 **Parent EO Number** 245

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek and SR 1116 (sub EO of EO 245)

Directions Broad River: Floyds Creek and SR 1116. This is a sub EO of Parent EO 099 (Wichmann 2005). 2 miles NE of Brice, NC.; 0.6 miles West of US 221 on the South side of SR 1116. The site is located 0.9 miles South of the interchange between US 221 and SR 1116. The individuals occur along a small springhead 0.1 miles South of SR 1116, 0.1 miles past Floyds Creek (Padgett 2003).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-03-13
EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).
EO Data **2012:** Site revisited in July 2012 with approximately 30 individuals observed (Padgett 2013).
2003: 30 individual singles and clumps counted (Padgett 2003).

Source Feature Identifier 24887
Source Feature Locator Broad River: Floyds Creek and SR 1116
Source Feature Descriptor 2003; Padgett

Surveyors James Padgett, ASU
James Padgett, NHP

Survey Type Quantitative ground survey

Survey Date 2012-07 **First Observation Date** 2003-03-13 **Last Observation Date** 2012-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Small forested north-facing dry to mesic slope with Kalmia latifolia, Quercus spp., Acer rubrum, Tipularia discolor and Smilax glauca present (Padgett 2003).
Min. Elevation 760 **feet** **Max. Elevation** 780 **feet**
EO Observed Area 0.10 **acres**
Rep Accuracy High
Separation Comments All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometers wide (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown		

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20256

EO Number 91 **Parent EO Number** 245

Additional Topics

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author	Amoroso	**Version Date**	2015-10-22
Transcribed By	CDD	**Transcription Date**	2004-07-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20279
EO Number 92

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Second Broad River: Webbs Creek, headwaters

Directions Second Broad River: Webbs Creek, headwaters. Four miles east-northeast of Forest City and 0.7 miles east of Corinth Intersection. North of SR 1574 along small springhead and Webbs Creek.

SURVEY INFORMATION

EO Rank BC - Good or fair estimated viability **EO Rank Date** 2003-04-20
EO Rank Comment
EO Data Padgett estimate 200-400 plants along north and south facing slopes during field surveys on 20 April 2003 (Padgett 2003).

Source Feature Identifier 24915
Source Feature Locator Second Broad River: Webbs Creek, headwaters
Source Feature Descriptor 2003; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2003-04-20 **First Observation Date** 2003-04-20 **Last Observation Date** 2003-04-20
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Associated species include Acer rubrum, Liriodendron tulipifera, Quercus alba, Ilex spp., Polystichum acrostichoides, Osmunda regalis, Osmunda cinnamomea, Smilax glauca, Sanguinaria canadensis, Kalmia spp., and Carex spp. in a Dry-Mesic Oak-Hickory Forest community. Small seepage areas are present along the unnamed tributary (Padgett 2005).
Min. Elevation 1,000 **feet** **Max. Elevation** 1,020 **feet**
EO Observed Area 0.80 **acres**
Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown		

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20279

EO Number 92

DOCUMENTATION

Reference Code	Citation
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

Specimen

HERB.BOON 165999, J E PADGETT APRIL 18, 2003

HERB.BOON 166001, J E PADGETT APRIL 18, 2003

HERB.BOON 166600, J E PADGETT APRIL 18, 2003

VERSION

Version Author Robinson **Version Date** 2015-10-08

Transcribed By CDD **Transcription Date** 2004-07-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20286
EO Number 93

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
West Shelby Mesic Slope

Survey Site
First Broad River: Brushy Creek and West Shelby Mesic Slope (parent EO of Sub EOs: 034 and 035)

Directions First Broad River: Brushy Creek and West Shelby Mesic Slope. This is a parent EO of Sub EOs: 034 and 035 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05-19
EO Rank Comment
EO Data This is a parent EO of two Sub EOs: 034 and 035 (Wichmann 2005). See each sub EO for details.

Source Feature Identifier 49897
Source Feature Locator West Shelby Mesic Slope
Source Feature Descriptor Parent EO 93

Surveyors **Survey Type**
Survey Date 2005-05-19 **First Observation Date** 1997-06-04 **Last Observation Date** 2005-05-19
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20286

EO Number 93

DOCUMENTATION

Reference Code	Citation
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.

VERSION

Version Author Amoroso **Version Date** 2015-09-17

Transcribed By CDD **Transcription Date** 2004-07-29

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20289
EO Number 96

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Catawba

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Murrays Mill/Upper Balls Creek Natural Area

Survey Site
Catawba River: Balls Creek, Murrays Mill Lake (Parent includes sub EOs 038, 039, & 184 [former sub EO 022]).

Directions Catawba River: Balls Creek, Murrays Mill Lake. This is a parent EO that includes three sub EOs: 038, 039, and 184 [former sub EO 022](Wichmann 2005). Located 100 meters from Murray's Mill Road at Murray's Mill (Terry Holdsclaw, 2010).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2010-09-30
EO Rank Comment EO rank based on EO rank specs for the species and most recent EO data for each EO (Robinson 2016). See each sub EO for details.
EO Data This is a parent EO that includes three sub EOs: 038, 039, and 184 [former sub EO 022] (Wichmann 2005). See each sub EO for detailed EO data.
Specimen collected near a creek by Terry Holdsclaw on 8 April 2010 (Terry Holdsclaw, 2010).

Source Feature Identifier 49109
Source Feature Locator Catawba River: Balls Creek, Murrays Mill Lake
Source Feature Descriptor Parent EO 96

Surveyors Terry Holdsclaw **Survey Type**
Survey Date 2013-10-30 **First Observation Date** 1994-05-11 **Last Observation Date** 2013-10-30
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Specimen collected in the woods just above the floodplain, 20 meters from the creek (Terry Holdsclaw, 2010).
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas Murrays Mill Conservation Site
NC Department of Transportation Mitigation Site

Owner Type **Owner Name** **Notes**
Unknown

Owner Comments
Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20289

EO Number 96

Protection Comments

Additional Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
F96CON01NCUS	Contributed. 1996. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04DOT01NCUS	NC Department of Transportation and Catawba Coutny Historical Association. 2004. Draft Conservation Plant for Murrays Mill Conservation Area, Catawba County, NC. 2pp.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F01DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff in 2001.
F94CON01NCUS	Contributed. 1994. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.

Specimen

HERB.NCU SN, Terry Holdsclaw 57, 8 April 2010.

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Wichman **Transcription Date** 2005-07-25

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20290
EO Number 97

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Sandy Run/Lovelace Natural Area
Sandy Run/Cliffside Natural Area

Survey Site
Broad River: Sandy Run Creek, Sandy Run/Cliffside, & Sandy Run/Lovelace NAs (parent EO of 17,18,69&230)

Directions Broad River: Sandy Run Creek, Sandy Run/Cliffside Natural Area, & Sandy Run/Lovelace Natural Area. This is a parent EO that includes 4 sub EOs: 017, 018, 069, and 230 (Wichmann 2005). See each Sub EO for detailed directions.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2002-04-25
EO Rank Comment
EO Data This is a parent EO that includes 4 sub EOs: 017, 018, 069, and 230 (Wichmann 2005). See each Sub EO for detailed EO data.

Source Feature Identifier 49110
Source Feature Locator Broad River: Sandy Run Creek, Sandy Run/Cliffside Natural Area, & Sandy Run/Lovelace Natural Area
Source Feature Descriptor Parent EO 97

Surveyors **Survey Type**
Survey Date 2002-04-25 **First Observation Date** 1993-04-04 **Last Observation Date** 2002-04-25
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20290

EO Number 97

DOCUMENTATION

Reference Code	Citation
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F93NHP01NCUS	NCNHP Staff, 1993 Field Survey
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

VERSION

Version Author Padgett **Version Date** 2014-09-26

Transcribed By Wichmann **Transcription Date** 2005-11-29

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20291
EO Number 98

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Cat Square Heartleaf Forest

Survey Site
South Fork Catawba River: Indian Creek (parent EO which includes sub EOs 002, 003, 004, & 060)

Directions South Fork Catawba River: Indian Creek. This is a parent EO of four Sub EOs: 002, 003, 004, & 060 (Wichmann 2005). See each sub EO for details.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2001-04-06
EO Rank Comment
EO Data This is a parent EO of four Sub EOs: 002, 003, 004, & 060 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 49120
Source Feature Locator South Fork Catawba River: Indian Creek
Source Feature Descriptor Parent EO 98

Surveyors **Survey Type**
Survey Date 2012-03-16 **First Observation Date** 1957-04-28 **Last Observation Date** 2012-03-16
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20291

EO Number 98

DOCUMENTATION

Reference Code	Citation
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author Amoroso **Version Date** 2015-10-09

Transcribed By Wichmann **Transcription Date** 2005-11-30

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20292
EO Number 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Brice Rare Plant Site
Hensons Creek Natural Area
Jenkins Flatrock
Kudzu Farm Rare Plant Site
Floyds Creek Tributary Rare Plant Site
Big Horse Creek Rare Plant Site

Survey Site
Broad River: (Parent Includes 17 sub EOs: 09, 10, 37, 52, 53, 55, 61, 62, 63, 75, 76, 79, 90, 121,172, 181, 182, 319).
USFWS Flex Fund Monitoring Site 2 including sub records 10, 37, 55, 75, 76, 181

Directions Broad River: Hensons Creek Ravine, Brice Rare Plant Site, and Sandy Mush Outcrop. This is a Parent EO that includes sub 17 EOs: 09, 10, 37, 52, 53, 55, 61, 62, 63, 75, 76, 79, 90, 121,172, 181, 182, and 319. See sub EO records for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2015-05-19
EO Rank Comment
EO Data **2016**: Bloom counted 2552 plants on May 25 and June 15, 2016 in 2.29 acres of monitoring plots in sub EOs **2015**: 3011 plants counted on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres (Padgett and Feldman 2015).**2014**: Padgett counted 3094 plants within monitoring plots on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area (Padgett 2014).**2013**: Padgett counted 3302 plants counted within monitoring plots May and on 17 July 2013 for estimated total of 35,000+ plants over 24.61 acres (Padgett 2013). **2012**: 2551 plants counted in plots encompassing 2.29 total acres: sub-EOs 10, 37, 55, 75, 76, 79, 90, 121, and 181. Estimate of 27,415 plants over the 24.61-acre population area for those sub-EOs. (Padgett 2012).This is parent EO that includes sub 17 EOs: 09, 10, 37, 52, 53, 55, 61, 62, 63, 75, 76, 79, 90, 121,172, 181, and 182 (Wichmann 2005). See sub EO records for detailed EO data.

Source Feature Identifier 68729
Source Feature Locator Broad River: Hensons Creek Ravine, Brice Rare Plant Site, and Sandy Mush Outcrop
Source Feature Descriptor Parent EO 99

Surveyors James Padgett, NHP
Maxwell Feldman, NHP intern
Survey Type

Survey Date 2015-05-19 **First Observation Date** 1981 **Last Observation Date** 2015-05-19
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20292

EO Number 99

General Comments:

OWNERSHIP

Managed Areas Parris Heartleaf Registered Heritage Area

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F13NHP01NCUS	NCNHP Staff, 2013 Field Survey
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
F03REN01NCUS	Renninger, H. 2003. Field survey.
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By **Transcription Date**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20295
EO Number 100

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: parent EO including: 14,49,50,51,73,74,149,233,235-241&246

Directions Broad River/Sandy Run Natural Areas: This is a parent EO which included 15 sub EOs: 014, 049, 050, 051, 073, 074, 149, 233, 235, 236, 237, 238, 239, 240, 241, and 246 (Wichmann 2005). See each sub EO for detailed directions. This area is refered to as the Broad River Tract by NC DOT.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2012-03-15
EO Rank Comment
EO Data This is a parent EO which included 15 sub EOs: 014, 049, 050, 051, 073, 074, 149, 233, 236, 237, 238, 239, 240, 241, and 246 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 30363
Source Feature Locator Broad River/Sandy Run Natural Areas
Source Feature Descriptor Parent EO 100

Surveyors **Survey Type**
Survey Date 2012-05-17 **First Observation Date** 2001-03-05 **Last Observation Date** 2012-05-17
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: NCPCP issued permit ID #139 to Matthew Jones (Garner-Webb University) to allow for activities proposed in his pollination study proposal including covering flowers and collecting flowers and seeds from all sub-EOs under this parent. Permit expires 31 December 2009 (NCPCP 2009).

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20295

EO Number 100

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09PCP01NCUS	N.C. Plant Conservation Program. 2009. Protected Plant Conservation Permit and Record, issued in 2009.
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-04-22

Transcribed By Wichmann **Transcription Date** 2005-11-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20296
EO Number 101

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Camp Creek Bluff

Survey Site
South Fork Catawba River: Jacob Fork, Camp Creek North and Camp Creek Bluff (Parent includes sub EOs 005, 006, & 180).

Directions South Fork Catawba River: Jacob Fork, Camp Creek North and Camp Creek Bluff. This is a parent EO of three sub EOs: 005, 006, & 180). See each sub EO for detailed directions (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-04-18
EO Rank Comment
EO Data This is a parent EO of three sub EOs: 005, 006, and 180 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 49130
Source Feature Locator South Fork Catawba River: Jacob Fork, Camp Creek North and Camp Creek Bluff
Source Feature Descriptor Parent EO 101

Surveyors **Survey Type**
Survey Date 2002-04-18 **First Observation Date** 1981-05 **Last Observation Date** 2002-04-18
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO8 is 2.2 km to the south and in the Broad River basin; EO117 is 2.5 km to the south and in the Broad River Basin (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20296

EO Number 101

DOCUMENTATION

Reference Code	Citation
F89NHP01NCUS	NCNHP Staff, 1989 Field Survey
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
G02BUR01NCUS	Oakley, S.C. 2002. An Inventory of the Significant Natural Areas of Burke County, North Carolina.

VERSION

Version Author Robinson **Version Date** 2016-05-19

Transcribed By Wichmann **Transcription Date** 2005-07-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20301

EO Number 106 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
New Bethel Rare Plant Site

Survey Site
Broad River: New Bethel Plant Site (sub of 247).
Tate Conservation Easement Transplant site
NCDOT TIP: 2233 A and B

Directions Broad River: Floyds Creek near Harris, unnamed tributary just east of US 221 and just north of the Clinchfield Railroad. This is a sub EO of Parent EO 247 (Wichmann 2005). Two sub-occurrences ([A] and [B]): [A], ravine just northeast of US 221, approximately 0.2 mile north of the Clinchfield Railroad (Wichmann 2005); "I-74 to US 221 south; travel south just past Jayne's Road, plants are in low area to east of 221" (Renniger 2005). [B], "Along and unamed tributary to Floydes Creek;approximately 2000' south of US 221 intersection with SR 1111; east of US 221 along creek to Railroad tracks; use Jayne's Rd (no SR) for access" (Renninger 2003). [Note: Transplant plots (EO 286) source feature currently overlaps area of native plants (EO 106). M. Buchanan (pers. comm. with S. Mason, 10 March 2009) advised to leave mapping this way because the native population may be patchy and the polygon provided by Padgett (2007) may not account for this and encompass the entire extent of the occurrence.]

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-04-22

EO Rank Comment Changed to A, according to rank specs (2008). Moved back up from C to B once quantitative data was added (Padgett 2007). Downgraded from a B to a to C using current EO data and following current EO rank specs for this species (Wichmann 2005).

EO Data **2015**: 4547 plants counted on 23 April (NCDOT 2015).
2013: 1675 plants counted on 16 April (NCDOT 2013).
2012: Wagner et. al. observed over 3000 plants on 15 March 2012 (Wagner 2012).
2011: 3088 plants countedon 15 April (NCDOT 2011).
2010: 93 plants moved from the area to be impacted by the road project to the transplant area on this site on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286). NCDOT staff propose to transplant 330 individuals that occur within the construction footprint to the Tate Conservation Easment during the winter of 2009-2010 (NCDOT 2009) [Relocated plants are tracked under EO 286].
2008: NCDOT staff, including Fontaine, observed at total of 2,326 plants at this site in 2008: 2104 plants were observed on both sides of the unnamed tributary of Floyd's Creek between the Chinchfield railroad tracks and Jaynes Road (SR-2287) on 22 April
2008: 222 plants (some in flower) were observed on 28 February 2008 along the ephemeral stream perpendicular to US-221 that feeds into the unnamed tributary (Fontaine 2008). Additional plant found along a small cove area between the original known localities along the unnammed tributary [sub occurance B] and the small clump of plants found along the highway (US 221) [sub occurance A]. Estimated 50-75 additional plants. This occurance was re-mapped to reflect this additional find (Padgett 2008).
2005: 641 clumps observed and counted on 20 April 2005 by H W Lochner and Padgett (Padgett 2007). Estimated between 200-500 plants seen (Padgett 2005).
2003: Sub-occurrence [A], 8 clumps, 4 seedlings over 0.02 acres; vegetative reporduction evident (Renninger 2003).
Sub-occurrence [B], Approximately 250 individual clumps, in leaf and flower, seedlings and clonal/vegetative reproduction evident; flowers mostly disintegrated (Renninger 2003).

Source Feature Identifier 39819
Source Feature Locator Floyds Creek near Harris, unnamed tributary just east of US 221 and just north of the Clinchfield Railroad.
Source Feature Descriptor 2005: NCNHP

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20301

EO Number 106 **Parent EO Number** 247

Source Feature Identifier 90099
Source Feature Locator Tate Conservation Easement
Source Feature Descriptor 2011; NCDOT

Source Feature Identifier 90100
Source Feature Locator Tate Conservation Easement
Source Feature Descriptor 2013; NCDOT

Source Feature Identifier 90103
Source Feature Locator Tate Conservation Easement
Source Feature Descriptor 2015; NCDOT

Surveyors Heather Wallace Renninger, NCDOT, H.W. Lochner Inc
Emily Fentress, H.W. Lochner Inc.
James Padgett, NHP
Lance Fontaine, NCDOT
Jackie Wagner, ASU
TIm Bassette, NCDOT
Phil May, Carolina Ecosystems
Chris Hopper, Carolina Ecosystems
Moni Bates, Alderman Environmental
Rob Crowther, Carolina Ecosystems

Survey Type Qualitative ground survey

Survey Date 2015-04-23 **First Observation Date** 2003-05-15 **Last Observation Date** 2015-04-23

Data Sensitive Element N **Comments**

Monitoring Needs Comments Conservation Management Plan prepared by NCDOT includes monitoring and reporting 1-year, 3-year, and 5-year post-transplant (NCDOT 2009).

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Sub-occurrence [A], Dry-mesic Oak Hickory; high quality; Associated species: Quercus alba, Quercus rubra, Quercus coccinea, Quercus velutina, Carya tomentosa [C. alba], Pinus echinata, Oxydendron arboretum, Euonymus americana, Cornus florida, Liriodendron tulipifera, Lonicera sempervirens, Carex sp (Renninger 20005). Sub-occurrence [B], Mesic Mixed Forest grading into Basic Mesic Forest, medium to high quality, Pacolet soils; Associated species: red oak, white oak, strawberry bush, carpinus, sourwood; alluvial and lower to upper slope; Micro-relief: flat, concave, convex, and drop-off; moist to dry; filtered light (Renninger 2003).

Min. Elevation 760 **feet** **Max. Elevation** 870 **feet**

EO Observed Area 3.00 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: NCDOT proposes to use this site as a repository for approximately 333 Hexastylis naniflora plants that will be displaced by the US 221 road widening project. These plants may come from EOs 076, 107, 113, 114,122, 172, 173, 174, and 175 (DOT 2009). 0.293 acres and 50 plants anticipated to be directly affected and 0.475 acres and 255 plants indirectly affected by this project (Fontaine 2009 - see Biological Assessement).

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20301

EO Number 106 **Parent EO Number** 247

Owner Type	Owner Name	Notes
Private individual	Robert and Carolyn Tate	4411 US 221 South, Forest City, NC 28043; (828) 245-2910
State government	NC Department of Transportation	

Owner Comments

Management Comments

Protection Comments Landowner along northeastern part of EO unwilling to enter into a conservation easement agreement with NCDOT (Bassette 2009). This population is expected to be protected with a conservation easement held by NC DOT as mitigation for impacts related to the widening of NC 221. The Tate family will retain ownership of the land (DOT 2009).

Additional Topics The two sub occurences have been remapped and combined after additional plants were found between them (Padgett 2008). Sub-occurrence [A], "Along proposed US 221 widening corridor (NCDOT TIP# R2233A)" (Renninger 2005). Impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). Sub-occurrence [B], May be inpacted by US 221 widening (Renninger 2003). "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
F08CON01NCUS	Contributed. 2008. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.
F15DOT01NCUS	N.C. Department of Transportation. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory, NCDOT.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By BLW **Transcription Date** 2005-03-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20302

EO Number 107 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & SW of US 221 (sub of 177).
USFWS Flex Fund Monitoring Site 9 (in part)
NCDOT R-2233 A and B

Directions Broad River: Floyds Creek, Long Branch, unnamed tributary 0.3 mile south east of Huntley Church on the south west side of US 221. This is a sub EO of parent EO 177(Wichmann 2005). Shiloh: US 221, 1 mile north of US 74, unnamed tributary to Long Branch of Floyds Creek; located in a thin band along stream bank in most areas, on both sides [includes EO 122] of US 221 (Renninger 2003).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2015-05-20

EO Rank Comment EO rank raised to reflect quantative data and EO specs (Padgett 2007). EO rank based on EO rank specs for this species (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015).
2012: Wagner et. al. counted over 100 plants on 15 March 2012. (Wagner 2012).
2008: 239 plants counted by NCDOT in 2008 (NCDOT 2009, Fontaine 2009).
2005: Combined with sub EO 122, there were 554 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 250 clumps occurring over approximately 1 acre [includes EO 122] (Renninger 2003).

Source Feature Identifier 25044

Source Feature Locator Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & SW of US 221 (sub of 177).

Source Feature Descriptor 2003-04-29; Renninger

Surveyors James Padgettt, NHP
Heather Renninger-H.W.Lochner Inc.
NCDOT personnel

Survey Type Qualitative ground survey

Survey Date 2008 **First Observation Date** 2003-04-29 **Last Observation Date** 2008

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Dry-mesic Oak-hickory Forest grading to a Mesic-mixed hardwood forest (Piedmont-subtype); medium quality, disturbed by invasives and historic dumping (Renninger 2005).

Min. Elevation 990 **feet** **Max. Elevation** 1,120 **feet**

EO Observed Area **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20302

EO Number 107 **Parent EO Number** 177

Rep Accuracy High

Separation Comments This sub EO is located within the same ravine as EO 122 but is separated by US 221 and is therefore considered a separate sub EO; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Timken Inc.	2012 permission letter, no response

Owner Comments

Management Comments

Protection Comments

Additional Topics 127 plants and 0.196 acres expected to be directly impacted and 61 plants and 0.095 acres expected to be indirectly impacted by this road project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 211 widening (R-2233AandB) to be determined" (HDR personnel 2005). "May be impacted by the widening of US 221" (Renninger 2003).

DOCUMENTATION

Reference Code	Citation
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Specimen

UNC Herbarium

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By CDD **Transcription Date** 2004-08-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20332

EO Number 113 **Parent EO Number** 245

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Floyds Creek Tributary Rare Plant Site

Survey Site
Broad River: Floyds Creek Tributary Rare Plant Site (west)) (Sub of 245)
NCDOT: TIP R-2824
NCDOT TIP: R-2233

Directions Broad River: Floyds Creek Tributary Rare Plant Site (west). This is a Sub EO of Parent EO 099 (Wichmann 2005). 1.5 road miles north of the Broad River on the west side of US 221(Wichmann 2005)."West of US 221; approximately 1500' south of intersection of US 221 and SR 2109; along mostly north to northwest-facing banks of an unnamed tributary to Floyd's Creek" (Renninger 2003).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2007-01-11

EO Rank Comment EO rank changed due to size of population in regards to EO Specs (Padgett 2007). EO rank is based on EO Rank Specs for this species and EO data for each sub EO, when taken together (Wichmann 2005).

EO Data **2010:** 7 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).
2005: Combined with EO 175 located just across US 221, there were 1175 plants observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 150 clumps over 3.005 acres; in leaf and flower (HW Lochner personnel 2005).

Source Feature Identifier 25049
Source Feature Locator Broad River: Floyds Creek Tributary Rare Plant Site (west)
Source Feature Descriptor 2003; NCDOT Consultant

Surveyors Heather Renninger, H.W. Lochner
Emily Fentress, H.W. Lochner
James Padgett, NHP

Survey Type Qualitative ground survey

Survey Date 2010-01-27 **First Observation Date** 2003-05-15 **Last Observation Date** 2010-01-27

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 840 **feet** **Max. Elevation** 860 **feet**
EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments This sub EO is located in the same ravine as sub EO 175 but is separated by US Hwy 221; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20332

EO Number 113 **Parent EO Number** 245

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private organization		

Owner Comments Partially (upper slopes and pine plantation) owned by Loblolly Hunting Club (recognized by NCWRC)

Management Comments

Protection Comments

Additional Topics 62 plants and 0.374 acres of this EO and EO 175 expected to be directly impacted and 123 plants and 0.744 acres expected to be indirectly impacted by this project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). "May be impacted by widening of US221; trampling by cattle west of US221 (approximately 1000' from road)" (Renninger 2003).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Robinson **Version Date** 2015-11-04

Transcribed By Wichmann **Transcription Date** 2005-04-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20333

EO Number 114 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and N of SR 2125 (sub EO of 247)
NCDOT TIP: R-2233

Directions Broad River: Floyds Creek near Harris, unnamed tributary east of US 221 and north of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). Along east side of Hwy 221, 0.2 miles north of intersection with State Road 2125. "east side of US 221, 300 feet south of Floyd's Creek, on an unnamed tributary to Floyd's Creek" (Renninger 2003).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-05-03

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2010:** 14 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).
2004 to 2008: 133 plants over 0.05 acres observed by NCDOT biologists [date unknown - after 2003 and before December 2008] (Fontaine 2009 - Biological Assessment).
2003: 25 individual clumps over 0.054 acres in leaf and flower with clonal/vegetative evidence of reproduction (S. Smith 2003).

Source Feature Identifier 28190

Source Feature Locator Floyds Creek near Harris, unnamed tributary east of US 221 and north of SR 2125

Source Feature Descriptor 2014; NCNHP

Surveyors Susan Smith, H.W. Lochner
Ken Roeder, H.W. Lochner

Survey Type Quantitative ground survey

Survey Date 2010-01-27 **First Observation Date** 2003-05-03 **Last Observation Date** 2010-01-27

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic mixed hardwood with Osmunda cinnamomea, Polysticum acrostichoides, Liriodendron tulipifera, and Acer rubrum; Pacolet soils, fairly undisturbed area, but lots of Kudzu nearby (S. Smith 2003).

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High

Separation Comments This EO is located less than 0.1 km away from EO 174, the two occurrences are separated by road and are therefore treated as sub EOs of the same Parent EO; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20333

EO Number 114 **Parent EO Number** 247

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics 0.020 acre and 52 plants to be directly affected and 0.040 acre and 106 plants to be indirectly affected by this project [the total number of impacted plants exceeds the number of plants reported for the site] (Fontaine 2009 - see Biological Assessement). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Robinson **Version Date** 2015-11-04

Transcribed By Wichmann **Transcription Date** 2005-08-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20334

EO Number 115 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and S of SR 2125 (Sub of 247).

Directions Broad River: Floyds Creek, unnamed tributary east of US 221 and south of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). In two locations: (A) East side of US 221 south of SR 2125 along creek in woods north of dog pens at residence, creek is unnamed tributary of Floyds Creek; and (B) East side of US 221 south of SR 2125 in back yard of trailer by unnamed tributary of Floyds Creek, westernmost location (Roeder 2003).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2007-01-11

EO Rank Comment EO rank upgraded from a D to a C based on quantitative data and EO Specs (Padgett 2007).

EO Data **2005:** Combined with sub EO 114, there were 133 clumps observed and counted in April 2005 by HWLochner, Inc. and Padgett (Padgett 2007).
2003: 75 clumps total, in two sub-occurrences: (A) 25 individual clumps over 0.054 acres, in leaf and flower, clonal/vegetative evidence of reproduction; (B) 50 individual leaf, clump over 0.039 acres, in leaf and flower, clonal/vegetative evidence of reproduction (Roeder 2003).

Source Feature Identifier 27319
Source Feature Locator Site A, Floyds Creek, unnamed tributary east of US 221 and south of SR 2125
Source Feature Descriptor 2003; K. Roeder, HWLochner, Inc.

Source Feature Identifier 28557
Source Feature Locator Site B, Floyds Creek, unnamed tributary east of US 221 and south of SR 2125
Source Feature Descriptor 2005; HWLochner, Inc and Padgett

Surveyors Ken Roeder, W.H. Lochner Inc.
James Padgett, NHP

Survey Type Quantitative ground survey

Survey Date 2005-04 **First Observation Date** 2003-05-05 **Last Observation Date** 2005-04

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description (A) Habitat is of poor quality due to local residence; Associated species, yellow poplar and red maple; Topographic position, lower slope - alluvial; Micro-releif, flat drop-off; Moisture regime, seasonally wet; shaded (B) Habitat is of poor quality due to local residence, some naniflora in mowed areas of yard near creek; Associated species, yellow poplar, red maple and lawn; Topographic position, lower slope - alluvial; Micro-releif, flat convex; Moisture regime, moist to seasonally wet; filtered sun/shade (Roeder 2003).

Min. Elevation 230 **feet** **Max. Elevation** 240 **feet**

EO Observed Area **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20334

EO Number 115 **Parent EO Number** 247

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual		

Owner Comments

Management Comments Speak with landowner to advise of protected status (mowing plants) (Roeder 2003).

Protection Comments

Additional Topics "Some naniflora in mowed area of yard near creek" (Roeder 2003). "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F05NHP02NCUS	NHP Staff, 2005 field survey.

VERSION

Version Author Robinson **Version Date** 2016-08-24

Transcribed By Wichmann **Transcription Date** 2005-03-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20351
EO Number 117

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)
Cleveland (NC)

Watershed
03050102 - South Fork Catawba
03050105 - Upper Broad

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
First Broad River: Knob Creek, Leeman Gap (parent EO, includes sub EOs 083 & 084)

Directions First Broad River: Knob Creek, Leeman Gap. This is a parent EO including two sub EOs: 083 and 084 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank U - Unrankable **EO Rank Date** 2003-03-21
EO Rank Comment ID of Sub EOs not confirmed (Wichmann 2005).
EO Data This is a parent EO of two sub EOs: 083 and 084 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 25090
Source Feature Locator First Broad River: Knob Creek, Leeman Gap.
Source Feature Descriptor Parent EO 117

Surveyors **Survey Type**
Survey Date 2003-03-21 **First Observation Date** 2003-03-21 **Last Observation Date** 2003-03-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** ID of sub EOs has not been confirmed (Wichmann 2005).

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO8 is 3km to the east and is in the same river basin; Parent EO101 is 2.5km to the north and in the Catawba River Basin (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20351

EO Number 117

Additional Topics

DOCUMENTATION

Reference Code	Citation
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey

VERSION

Version Author	Amoroso	**Version Date**	2015-09-25
Transcribed By	Wichmann	**Transcription Date**	2005-11-30

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20352
EO Number 118

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Big Island Carolina Hemlock Bluff

Survey Site
Big Island Carolina Hemlock Bluff and Natural Area

Directions Big Island Carolina Hemlock Bluff and Natural Area. 0.2 miles north of SR 1126 (Stacey Road), 0.6 miles directly east of the Rutherford/Polk County line; population lies along unnamed stream 0.1 mi south of the Broad River.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2004-08-06
EO Rank Comment
EO Data James Padgett observed an estimated 500 vegetative and flowering individuals, with seedlings present on 06 August 2004 (Padgett 2004).

Source Feature Identifier 25092
Source Feature Locator Big Island Carolina Hemlock Bluff
Source Feature Descriptor 2004-08-06; Padgett

Surveyors James Padgett, NCNHP **Survey Type** Qualitative ground survey
Survey Date 2004-08-06 **First Observation Date** 2004-08-06 **Last Observation Date** 2004-08-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Topographic position: lower slope. Moisture regime: moist. Light: filtered. Associated species include Kalmia latifolia, Quercus alba, Mitchella repens, Rhododendron nudiflorum, Quercus coccinea, and several species of fern (Padgett 2004).
Min. Elevation 787 **feet** **Max. Elevation** 787 **feet**
EO Observed Area 4.00 **acres**
Rep Accuracy High **Separation Comments** This occurrence is 2km away from parent EO 99. Justification needed for separation.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	Private	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20352

EO Number 118

DOCUMENTATION

Reference Code	Citation
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.

VERSION

Version Author Robinson **Version Date** 2015-09-30

Transcribed By **Transcription Date** 2004-08-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20354
EO Number 121 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Dills Creek, unnamed tributary west of the creek (Sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Dills Creek, small unnamed tributary on the west side of Dills Creek. This is a sub EO of parent EO 099 (Wichmann 2005). From Harris, travel 2 miles southwest on State Road 1111. Turn north on State Road 1122 and continue 1.46 miles. The occurrence is located approximately .5 miles south of State Road 1122, on the south side of a field and woods.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2004-05-15
EO Rank Comment
EO Data **2004:** Estimated over 300 clumps observed. The EO extends approximately 75 feet along the stream channel and lower slopes; vegetative and flowering individuals, as well as seedlings observed on 27 May 2004 (Padgett 2004).

Source Feature Identifier 68197
Source Feature Locator Dills Creek, northeast of Hensons Creek Natural Area
Source Feature Descriptor Padgett 2012

Surveyors James Padgett, NHP **Survey Type** Qualitative ground survey
Survey Date 2004-05-15 **First Observation Date** 2004-05-15 **Last Observation Date** 2004-05-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Topographic position: lower slope. Moisture regime: moist. Light: filtered. Associated species include Kalmia latifolia, Quercus alba, Castanea dentata, Mitchella repens, Rhododendron nudiflorum, Quercus coccinea, and several species of fern (Padgett 2004).
Min. Elevation 210 **feet** **Max. Elevation** 240 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** This is a sub EO of principal EO 099; all sub EOs are located within 2.0 kilometers of one another and are not separated by an areas of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	KLH Acquisitions (Chris Robbins 2012)	2012 no response

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 20354

EO Number 121 **Parent EO Number** 99

Management Comments No known management plan is in place (Padgett 2004).

Protection Comments Logging is a potential threat to this population (Padgett 2004).

Additional Topics

DOCUMENTATION

Reference Code	Citation
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By M. Franklin **Transcription Date** 2004-08-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21053

EO Number 122 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & NE of US 221 (sub of 177).
NCDOT TIP: R-2233

Directions Broad River: Floyds Creek, Long Branch, unnamed tributary about 0.3 mile south east of Huntley Church on the north east side of US 221. This is a sub EO of principal EO 177 (Wichmann 2005). Shiloh: US 221, 1 mile north of US 74, unnamed tributary to Long Branch of Floyds Creek; located in a thin band along stream bank in most areas, on both sides [includes EO 107] of US 221 (Renninger 2003).

SURVEY INFORMATION

EO Rank B? - Possibly good estimated viability **EO Rank Date** 2007-01-11

EO Rank Comment EO rank elevated to reflect quantitative data and EO specs (Padgett 2007).

EO Data **2008:** 123 plants counted by NCDOT in 2008 (NCDOT 2009).
2005: Combined with sub EO 107, there were 554 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 250 clumps occurring over approximately 1 acre [includes EO 107] (Renninger 2003).

Source Feature Identifier 27457

Source Feature Locator Long Branch, unnamed tributary about 0.3 mile south east of Huntley Church

Source Feature Descriptor 2005; Padgett

Surveyors Heather Renninger, HW Lochner
H W Lochner personal
James Padgett, NHP

Survey Type Qualitative ground survey

Survey Date 2008 **First Observation Date** 2003-04-29 **Last Observation Date** 2008

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Dry-mesic Oak-hickory Forest grading to a Mesic-mixed hardwood forest (Piedmont-subtype); medium quality, disturbed by invasives and historic dumping (Renninger 2005).

Min. Elevation 990 **feet** **Max. Elevation** 820 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments This sub EO is located within the same ravine as EO 107 but is separated by US 221 and is therefore considered a separate sub EO; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21053

EO Number 122 **Parent EO Number** 177

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). Likely to be impacted by the widening of US 221 (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Robinson **Version Date** 2015-11-04

Transcribed By Wichmann **Transcription Date** 2005-04-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21274
EO Number 124

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Polk (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Sandy Springs Church Springhead Swamp

Survey Site
Sandy Springs Church Springhead Swamp

Directions Sandy Springs Church Springhead Swamp. "Southeastern Polk County; ca one mile W 10 N from Sandy Springs (at the jct. of SR-1343 and SR-1101)" (Rayner 1995).

SURVEY INFORMATION

EO Rank D? - Possibly poor estimated viability **EO Rank Date** 2005-05-18
EO Rank Comment
EO Data 20 plants counted by Franklin, Padgett, and Whichman on 18 May 2005, probably many more; very healthy plants (Franklin et al. 2005). Site harbors a good population (Rayner 1994).

Source Feature Identifier 28519
Source Feature Locator Sandy Springs Church Springhead Swamp
Source Feature Descriptor 2005-05-18; Franklin et al.

Source Feature Identifier 28520
Source Feature Locator Sandy Springs Church Springhead Swamp
Source Feature Descriptor 2005-05-18; Franklin et al.

Surveyors Doug Rayner, Wofford College
Franklin
Wichmann
Padgett

Survey Type Qualitative ground survey

Survey Date 2005-05-18 **First Observation Date** 1994 **Last Observation Date** 2005-05-18
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Piedmont Boggy Streamhead with Carex atlantica, C. debilis, and species typical of the Coastal Plain; Vinca minor from upslope invading and seemingly competing with Hexastylis naniflora plants (Wichmann et al. 2005). Springhead swamp (Rayner 1994).
Min. Elevation 820 **feet** **Max. Elevation** 1,017 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** EO is located within 2.0 kilometers of another EO (EO 125), however is separated by unsuitable habitat, a road, and are not within the same drainage (Robinson 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21274

EO Number 124

Owner Comments

Management Comments Vinca minor invading from upslope, competing with Hexastylis naniflora plants (Wichmann et al. 2005).

Protection Comments This "bog" is about 1/5 of the previous size [1994] and has been degraded, site has been impacted by some draining and soil movement, flags from a wetland delineation noted (Franklin et al. 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
P05PAD01NCUS	Padgett, James. 2005. Email regarding Hexastylis naniflora EOs, dated 14 April 2005, written to Misty Franklin and Brenda Wichmann.
U94RAY01NCUS	Rayner, D.A. 1994. Inventory of the natural areas of the Pacolet Area. Pacolet Area Conservancy and NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2015-12-04

Transcribed By Wichmann **Transcription Date** 2005-04-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21275
EO Number 125

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Polk (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
New Hope Springhead Swamp

Survey Site
Broad River: Mckinney Creek, New Hope Springhead Swamp
USFWS Flex Fund Monitoring Site 3

Directions Broad River: McKinney Creek, New Hope Springhead Swamp: Southeastern Polk County, near the Rutherford County line; ca. 3/4 mile NNW from Sandy Springs (Rayner 1994).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2015-05-29
EO Rank Comment

EO Data **2016**: 973 plants counted by Bloom on 13 May 2016. Estimated 12,235 plants covering the entire 5.03 re-mapped acres (Bloom 2016).
2015: 978 plants counted by Padgett on 29 May 2015 in 0.4 acres of monitoring plots. Estimated 9,707 total plants covering the entire 3.97 acres (Padgett 2015).
2014: Padgett counted 967 plants within monitoring plots on 19 May 2014 and estimated 9,597 plants covering 3.97 acres of mapped area (Padgett 2014).
2013: Padgett and Israel visited monitoring plot and counted 983 plants in permanent plot on 07 July 2013 and estimated the total population size to be approximately 9756 plants (Padgett 2013).
2012: This site was visited and remapped in June of 2012 by James Padgett and Laura Gadd (NHP). The site was visited again in July and a permanent plot was placed in and 950 plants counted with a population estimate of 9429 plants was made by Padgett and Israel on 17 July 2012 (Padgett 2012).
2005: Pagdett estimated 1,500 plants (Padgett et. al 2005).
1994: Raynor noted that it occurs in abundance in 1994 (Rayner 1994).

Source Feature Identifier 68179
Source Feature Locator New Hope Springhead Swamp
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68180
Source Feature Locator New Hope Springhead Swamp, EO 125 plot
Source Feature Descriptor Padgett EO 125 plot

Source Feature Identifier 89896
Source Feature Locator Broad River: Mckinney Creek, New Hope Springhead Swamp
Source Feature Descriptor Bloom 2016

Surveyors Doug Rayner, Wofford College
Misty Buchanan, NHP
Brenda Wichamann
James Padgett, NHP
Kimberly Israel, NHP
Laura Gadd, NHP
Sean Bloom, Catawba Land Conservancy

Survey Type Qualitative ground survey

Survey Date 2016-05-13 **First Observation Date** 1994 **Last Observation Date** 2016-05-13
Data Sensitive Element N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21275

EO Number 125

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Padgett accurately mapped the entire site in 2012. This site is part of a multi-year USFWS monitoring project focusing on the viability of Hexastylis naniflora (Padgett 2012).

DESCRIPTION

General Description LOW ELEVATION SEEP (PIEDMONT/MOUNTAIN SPRINGHEAD SUBTYPE – Canopy is primarily Liriodendron tulipifera, but also includes Pinus echinata, Quercus alba, Liquidambar styraciflua, and Acer rubrum. The sub canopy is primarily Acer rubrum and Nyssa sylvatica. The shrub layer is predominately Ilex opaca, Kalmia latifolia, Viburnum nudum var. nudum, and Calycanthus floridus. Other shrubs found throughout are Amelanchier arborea, Vaccinium corymbosum, Rhododendron periclymenoides, Xanthorhiza simplicissima, and Itea virginica. Along the drier edges of the seep are individuals of Asimina triloba. Much of the shrub layer is bound up with Smilax laurifolia and less often with Smilax rotundifolia, Muscadinia rotundifolia, and Parthenocissus quinquefolia. The herbaceous layer is dominated by Parathelypteris noveboracensis, Osmundastrum cinnamomeum, Osmunda spectabilis, but also includes Polystichum acrostichoides, Viola primulifolia, Viola sororia, Arundinaria gigantea Lorinseria areolate, Arisaema triphyllum, Sagittaria latifolia, Medeola virginiana, Mitchella repens, and Microstegium vimineum. (Bloom 2016)
Boggy seep in low woods along stream with Thelypteris noveboracensis, Ilex opaca, Liquidambar styraciflua, Calycanthus floridus, Xanthorhiza simplicissima, Itea virginica, Euonumus americana, Medeola virginiana, Rhododendron pariclymenoides, Smilax rotundifolia, Quercus alba, Lirodendron tulipifera, Viburnum nudum, Arundinaria sp., Kalmia carolina, Osmunda cinnamomea, and Aronia arbutifolia (Franklin et al. 2005). Springhead swamp (Rayner 1994).

Min. Elevation 270 **feet** **Max. Elevation** 300 **feet**

EO Observed Area 4.80 **acres**

Rep Accuracy Medium **Separation Comments** EO is located within 2.0 kilometers of another EO (EO 124), however is separated by unsuitable habitat, a road, and are not within the same drainage (Robinson 2015).

General Comments: The area around the monitoring plot is an intact and high quality natural community. However, impacts at the eastern end of the EO are causing some habitat degradation. The shrub layer is becoming heavily invaded by Ligustrum sinense and the herbaceous layer is quickly getting invaded by Microstegium vimineum. Additionaly a cleared hunting lane at the eastern end of the occurrence is of low severity and scope and of high immediacy (Bloom 2016).

OWNERSHIP

Managed Areas New Hope Springhead Swamp (Barefield) Registered Heritage Area

Owner Type	Owner Name	Notes
Private individual		
Private individual	Danny Barefield, 864 Tanner Rd, Rutherfordton, NC 28139	2012, 2015 permission granted to survey, 2016 reminder postcard sent

Owner Comments

Management Comments

Protection Comments A portion of this site now has formal protection as a Registered Heritage Area (RHA). (Padgett 2013).
This site as no formal protection but at least one landowner has expressed and interest in protecing his portion of this site (Padgett 2012).

Additional Topics Threats observed: Invasive species (Ligustrum sinense and Microstegium vimineum) found at the eastern end of the EO and introduced by an old road cut. A cleared hunting lane also is a low threat to the population (Bloom 2016).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21275

EO Number 125

DOCUMENTATION

Reference Code	Citation
P05PAD01NCUS	Padgett, James. 2005. Email regarding Hexastylis naniflora EOs, dated 14 April 2005, written to Misty Franklin and Brenda Wichmann.
U94RAY01NCUS	Rayner, D.A. 1994. Inventory of the natural areas of the Pacolet Area. Pacolet Area Conservancy and NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

VERSION

Version Author Robinson **Version Date** 2016-08-04

Transcribed By Wichmann **Transcription Date** 2005-04-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21280
EO Number 130

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville West

County Name
Polk (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Kross Keys Natural Area

Survey Site
Kross Keys Natural Area

Directions Pacolet River: Collinsville Creek, Kross Keys Natural Area. Unnamed branch to Collinsville Creek. Southeastern Polk County; ca. 1.5 miles southeast of Sandy Plains; the site is bounded to the north by SR-1551 (which is just S. of SR 1521), and to the south by SR-1536 (Rayner 1994).

SURVEY INFORMATION

EO Rank B? - Possibly good estimated viability **EO Rank Date** 2005-05-18
EO Rank Comment
EO Data On 18 May 2005, Franklin et al. counted 111 individuals, with likely more present (Franklin et al. 2005). Polk County's largest population (Rayer 1994).

Source Feature Identifier 28523
Source Feature Locator Kross Keys Natural Area
Source Feature Descriptor 1994; Raynor

Surveyors Doug Rayner, Wofford College
Brenda Wichmann, NCNHP
James Padgett, NCNHP
Misty Franklin, NCNHP

Survey Type Qualitative ground survey

Survey Date 2005-05-18 **First Observation Date** 1994 **Last Observation Date** 2005-05-18
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic mixed slope with Liriodendron tulipifera (dominant), Quercus rubra, Quercus alba, Nyssa sylvatica, Fraxinus sp., Ulnus serrulata, Oydendron arboreum, Ilex opaca, Itea virginica, Viburnum nudum, Acer rubrum, Lindera benzoin, Kalmia carolina, Rosa multiflora, Decumaria barbara, Woodwardia areolata, Prunus serotina, Oxypolis rididior, Mikania scandens, Carex spp., Perilla frutescens, Isoetes sp., Asplenium playneuron, Hypericum mutilum, Ranunculus abortivus, Ligustrum sinense, Smilax laurifolia, Carex sp. (rosea group), Hexastylis arifolia, Juniperus virginiana, Verbesina alternifolia, Maianthemum racemosum, Hieracium venosum, Thelypeteris noveboracensis, Parthenocissus quinquefolia, Lonicera japonica, Arisaema triphyllum, Osmunda cinnamomea, Amphicarpaea bracteata, Vaccinium corymbosum, and Rhododendron arborescens; healthy Nestronia umbellula (Franklin et al. 2005).

Min. Elevation 250 **feet** **Max. Elevation** 270 **feet**
EO Observed Area **acres**

Rep Accuracy High

Separation Comments Within 2.0 kilometers of EO 023 but not part of a principal-sub relationship due to the drainages and persistently unsuitable habitat inbetween the 2 EOs (Wichmann 2005).

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21280
EO Number 130

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code	Citation
P05PAD01NCUS	Padgett, James. 2005. Email regarding Hexastylis naniflora EOs, dated 14 April 2005, written to Misty Franklin and Brenda Wichmann.
U94RAY01NCUS	Rayner, D.A. 1994. Inventory of the natural areas of the Pacolet Area. Pacolet Area Conservancy and NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.

VERSION

Version Author Robinson **Version Date** 2015-10-01
Transcribed By Wichmann **Transcription Date** 2005-04-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21300

EO Number 149 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Sandy Run Creek, 1st tributary S of Grog Creek, to the NE (Sub of 100)
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Sandy Run Creek, first unnamed tributary south of Grog Creek and on the northeast side of Sandy Run Creek. NC DOT Broad River Tract Sites A, B, and N. James Padgett's 2001 Site 7. This is a sub EO of Principal EO 100 (Wichmann 2005). In three sub-occurrences along the tributary: A-South, adjacent to Sandy Run Creek; B-Middle, between A and C; C- North, at the headwaters (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2009-04-21

EO Rank Comment

EO Data 2012: 2722 total: 1501 plants counted at Site A, 954 plants counted at Site B and 267 plants counted at Site N by NCDOT biologists on 15 May 2012 (Bassette 2015).
2012: Wagner et. al. observed over 1000 plants on 15 March 2012. Individuals spread out over sub-occurences within 2 km of each other (Wagner 2012).
2008: 1,426 plants total counted by NCDOT biologists at sites A, B in April 2008 and site N on 21 April 2009 (Bassette 2009).
2003: 1,430 individuals observed over 3 sub-occurrences by NC DOT personnel (Bassette 2003).
2001: [sub-occurrence A:]Couple thousand individuals - Estimated 5,000 [over-estimation Padgett, 2005] plus, biggest population seen (Padgett 2001).

Source Feature Identifier 30265
Source Feature Locator Site N (HARP)
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30312
Source Feature Locator Broad River Tract, Site B
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30313
Source Feature Locator Broad River Tract, Site A
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 89586
Source Feature Locator Broad River Greenway Conservation Area, Site N
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89587
Source Feature Locator Broad River Greenway Conservation Area, Site A
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89588
Source Feature Locator Broad River Greenway Conservation Area, Site B
Source Feature Descriptor 2012; NCDOT Contractor

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21300

EO Number 149 **Parent EO Number** 100

Surveyors James Padgett, ASU
NC DOT Personnel
Jackie Wagner, ASU

Survey Type Qualitative ground survey

Survey Date 2012-05-15 **First Observation Date** 2001 **Last Observation Date** 2012-05-15

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Mountain laurel, holly, witch-hazel; Pin and hardwoods, oaks (Bassette 2003). Heath Bluff with plants occurring under Kalmia latifolia and Plystichium acrostichoides along stream and slopes(Padgett 2001).

Min. Elevation 650 **feet** **Max. Elevation** 800 **feet**

EO Observed Area 6.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NC DOT	

Owner Comments "Ownership of the Broad River Tract will ultimately be conveyed to Cleveland County, with the Broad River Greenway Association acting as the County's steward to the property" (Bassette 2003).

Management Comments

Protection Comments Occurrence is contained within NC DOT mitigation site, the Broad River Tract; see reference U03BAS01NCUS (Wichmann 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-04-21

Transcribed By Wichmann **Transcription Date** 2005-04-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21302
EO Number 151

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Richardson Creek, headwaters S of Shiloh Road and E of Danieltown

Directions Broad River: Richardson Creek, headwaters south of Shiloh Road and 0.7 air miles east of Danieltown.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2002-07-04
EO Rank Comment EO rank based on EO Rank Specs (Padgett 2005).
EO Data Between 100-200 estimated plants located along upper middle fork of the headwaters of Richardosn Creek on 4 July 2002 (Padgett 2002).

Source Feature Identifier 28144
Source Feature Locator Broad River: Richardson Creek
Source Feature Descriptor 2004; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2002-07-04 **First Observation Date** 2002-07-04 **Last Observation Date** 2002-07-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Plants occuring in a Dry-Mesic Oak-Hikcory Forest community with Quercus alba, Quercus coccinea, Carya ssp., Polystichium acrostichoides, Mitchella repens, Chimaphilia maculata, and Monotropsis uniflora (Padgett 2002).
Min. Elevation 960 **feet** **Max. Elevation** 980 **feet**
EO Observed Area 1.00 **acres**
Rep Accuracy Medium **Separation Comments** EO is located within 2.0 kilometers of another known EO of the same species, however is separated by unsuitable habitat and not within the same stream drainage (Robinson 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Private	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21302

EO Number 151

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author Robinson **Version Date** 2015-10-08

Transcribed By Wichmann **Transcription Date** 2005-04-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21348
EO Number 154

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Second Broad River: 0.5 miles south of Morrow Creek
Facebook Site
USFWS Flex Fund Monitoring Site 5

Directions Second Broad River; Facebook site: 0.6 miles south of Morrow Creek. "South of U.S. Highway 74 and Old Caroleen Road. Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester (McRae and Beckstrom 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2015-05-26
EO Rank Comment Changed EO rank from E to C based on data collected during site visits in 2012 (Padgett 2012). --EO data not reported with report of occurrence (Wichmann 2005).

EO Data 2016: 288 plants counted by Bloom on 18 May 2016 in 0.53 acre monitoring plot. Estimated 2,576 plants over entire 4.74 remapped acres in 2016 (Bloom 2106).
2015: 348 plants counted on 26 May 2015 in 0.53 acres of monitoring plots. Estimated 5,273 total plants covering the entire 8.03 acres (Padgett 2015).
2014: Padgett counted 324 plants within monitoring plots on 28 May 2014 and estimated 4,909 plants covering 8.03 acres of mapped area (Padgett 2014).
2013: Padgett and Israel counted 353 plants in permanent monitoring plots on 18 July 2013, and estimated the entire population to be 5348 plants covering an area of 8.03 acres (Padgett 2013).
2012: Site revisited in June 2012 by James Padgett and remapped. The site was revisited by James Padgett, Kimberly Israel, and Bryan Tompkins (USFWS) on 16 July, 2012. A permanent plot was installed and plants were counted with an extrapolated estimate of 4773 plants found to occurr on the site (Padgett 2012).
2006: Entire area estimated to contain over 2,500 rosettes in 2006, 160 of which were relocated (on-site) to areas not expected to be impacted from construction. Approximately 12 acres and at least 2,340 plants are to be permanently protected via a deed restriction or conservation easement [C. Wells, USFWS files and S&ME Biological Assessment.]
2005: Number unknown, "along stream corridors throughout the site" on 24 March 2005 (C. McRae and L. Beckstrom 2005).

Source Feature Identifier 30504
Source Feature Locator Second Broad River; Facebook site
Source Feature Descriptor 2005; McRae and Beckstrom

Source Feature Identifier 68181
Source Feature Locator Facebook site, north of Sandy Mush Outcrop
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68182
Source Feature Locator Facebook site, north of Sandy Mush Outcrop, EO 154 plot
Source Feature Descriptor Padgett EO 154 plot

Source Feature Identifier 89953
Source Feature Locator Second Broad River; Facebook site: 0.6 miles south of Morrow Creek
Source Feature Descriptor Bloom 2016

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21348

EO Number 154

Surveyors S& ME personnel
Catherine McRae, S&ME
Lisa Beckstrom, S&ME
James Padgett, NHP
Kimberly Israel, NHP
Bryan Tompkins, USFWS
Sean Bloom, CLC

Survey Type Qualitative ground survey

Survey Date 2016-05-18 **First Observation Date** 2005-03-24 **Last Observation Date** 2016-05-18

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Plant count and population estimation made during visits to the site in 2012 (Padgett 2012). Count or estimation of individuals needed to better rank this EO (Wichmann 2005). Located approximately 3.0 kilometers from EO 075, suitable habitat between occurrences should be searched (Wichmann 2005).

DESCRIPTION

General Description Site comprised of several habitat types, including a maintained powerling right-of-way, high quality deciduous wooded area, and disturbed successional areaas; Associated species in high quality woods: Quercus alba, Liriodendron tulipifera, Ilex opaca, Cornus florida, Diospyros virginiana, Carpinus caroliniana, Oxydendron arboreum, Leucothoe axillaris, Kalmia latifolia, Anisostichus capreolatus [Bignonia capreolatus], Polystichum acrostichoides, Mitchella repens, Tipularia discolor, Asplenium platyneuron, Lycopodium flabelliforme, Chimophila maculata, Sanquinaria canadensis, Hepatica americana, Goodyera pubescens (C. McRae and L. Beckstrom 2005).

Min. Elevation 800 **feet** **Max. Elevation** 930 **feet**

EO Observed Area 5.30 **acres**

Rep Accuracy High

Separation Comments Located approximately 3.0 kilometers from EO 57 (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Facebook	2012, 2015 permission granted

Owner Comments Landowner contact: Wayne Hawkins, East Coast Facilities manager, 284 Social Circle, Forest City North Carolina 28043, mobile: 828-755-4563, Desk: 828-247-2710, Wayneh@fb.com
Ms. Rebecca Tucker, 408 Social Circle, Forest City, NC 28043 828-755-4563

Management Comments

Protection Comments Deed restriction in place with USFWS monitoring the site (Padgett 2012). -- Deed restriction pending as of May 2009 (Bassette 2009). Proposed for development, see U05MCR01NCUS (Wichmann 2005).

Additional Topics Proposed for development, see U05MCR01NCUS (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21348

EO Number 154

DOCUMENTATION

Reference Code	Citation
U05MCR01NCUS	McRae, C., and L. Beckstrom. 2005. Letter regarding Protected Species Assessment to U.S. Fish and Wildlife Service, Asheville Field Office, Attention Mr. Brian Cole, Field Supervisor.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Wichmann **Transcription Date** 2005-04-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21385
EO Number 157

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lawndale

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Crooked Run Creek, tributary near SR 1519
NCDOT TIP: R-2824
NCDOT Division 12 project at SR 1519

Directions First Broad River: Crooked Run Creek, tributary near SR 1519. "This site is located on a north facing slope on the east side of SR 1519 in Cleveland County near Crooked Run Creek" (HDR 2005).

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2005-04-12
EO Rank Comment
EO Data 2010: 330 plants counted on 1 December 2010 (Hermann 2010)
2005: Jamison et al reported 1,394 plants, calculated based on counts from 10 sample plots 1/100 acres in size established over approximately 1.05 acre on 12 April 2005 (HDR Engineering 2005).

Source Feature Identifier 28149
Source Feature Locator First Broad River: Crooked Run Creek, tributary near SR 1519.
Source Feature Descriptor 2004-11-01; HDR, Inc.

Surveyors HARP
John Jamison, HDR, Inc.
Survey Type Qualitative ground survey

Survey Date 2010-12-01 **First Observation Date** 2004-11-01 **Last Observation Date** 2010-12-01
Data Sensitive Element N **Comments**
Monitoring Needs Comments NCDOT determined this population to be too far away from roadside to be protected in the right-of-way and stopped monitoring this site in 2010 (Bassette 2016).
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description The site consists primarily of Mesic Mixed Hardwood Forest....on a steep north-facing slope. It is dominated by mixed hardwoods averaging approximately 18 inches in diameter...Dominant vegetation consists of yellow poplar, red maple, white oak, with a moderate herb layer of English ivy, smilax, grape, and Japanese grass (*Microstegium vimineum*)...small amount of English ivy...(HDR 2005).
Min. Elevation 970 **feet** **Max. Elevation** 1,020 **feet**
EO Observed Area 1.05 **acres**
Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21385

EO Number 157

Management Comments	The site boundary is well outside of the ROW. NCDOT is not responsible for the future monitoring of this EO.
Protection Comments	Associated with NC DOT project B-2119, impacts to be determined; see U05HDR01NCUS (Wichmann 2005).
Additional Topics	Future road paving plans will have no effect of the DFHL population at this site (Hermann 2010). "SR 1519, Div. 12, 1,394 plants estimated prior to NCDOT impacts, number impacted to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
P05JAM02NCUS	Jamison, John R. 2005. Email, Subject: H. naniflora information. 2pp.
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.
G10DOT02NCUS	Herman, D.W. 2010. Dwarf-flowered Heartleaf, Hexastylis naniflora, Inventory and Monitoring Report. NCDOT Raleigh, NC

VERSION

Version Author	Robinson	**Version Date**	2016-08-23
Transcribed By	Wichman	**Transcription Date**	2005-05-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21386
EO Number 158

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Longview

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Jacob Fork, Camp Creek, tributary at SR 1115
USFWS Flex Fund Monitoring Site 6
NCDOT non-TIP Division 12 road construction project at SR 1115

Directions South Fork Catawba River: Jacob Fork, Camp Creek, tributary at SR 1115 "Along the east and west sides of Camp Creek Road" (Bassette 2003). "The site is located on a west facing slope on the east and west sides of SR 1115 in Catawba County" (HDR 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2016-05-24
EO Rank Comment This EO rank was downgraded from a C rank due to the overall quality of the site (Padgett 2012). -- EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2016**: 123 plants counted on 24 May 2016 in the entire 0.09 acre re-mapped (Bloom 2016).
2015: 188 plants counted on 14 April 2015 in the entire 0.2 acres mapped (Padgett 2015).
2014: Padgett counted a total of 183 plants in the summer of 2014 (Padgett 2014).
2013: Padgett counted 204 total plants on 16 July 2013 (Padgett 2013).
2012: 556 plants counted on 17 December (NCDOT 2012).
2012: This site was remapped in June of 2012 by James Padgett and Laura Gadd (NHP); James Padgett counted 256 plants on 19 June 2012. The site was timbered (clear cut) early spring of 2012.
2010: 535 total plants counted on 1 December 2010; 312 on the east side of the road and 223 on the west side (Hermann 2010).
2005: -- 334 Hexastylis plants were directly counted on this site; 325 on the east side of SR 1115 and 9 on the west side; plant density calculates to 1392 plants per acre (HDR 2005).
2003: 357 plants counted in 2003 by Tim Bassette, 189 on the west side and 357 on the east side (Hermann 2010).
2001: Approximately 546 plants in two areas: 357 counted over 0.41 ac along the east side of Camp Creek Road; 189 counted over 0.19 ac. along the west side of the road; 7 May 2001(Bassette 2003).

Source Feature Identifier 68183
Source Feature Locator Camp Creek, north of Jacob Fork West Corridor, EO 158 plot
Source Feature Descriptor 2012; Padgett; EO 158 plot

Source Feature Identifier 89955
Source Feature Locator South Fork Catawba River: Jacob Fork, Camp Creek
Source Feature Descriptor Bloom 2016

Source Feature Identifier 90104
Source Feature Locator Jacob Fork, Camp Creek, tributary at SR 1115
Source Feature Descriptor 2012; NCDOT

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21386

EO Number 158

Surveyors HDR
HARP
Tim Bassette, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
James Padgett, NHP, 2012, 2013
Sean Bloom, CLC
Laura Gadd, NHP 2012

Survey Type Quantitative ground survey

Survey Date 2016-05-24 **First Observation Date** 2001-05-07 **Last Observation Date** 2016-05-24

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** EO is located within 3.0 kilometers (straight line distance) of EO 058, suitable habitat between EOs 158 and 058 should be searched (Wichmann 2005).

DESCRIPTION

General Description This site was clear cut in early spring of 2012 (Padgett 2012). -- "The site consists primarily of Mesic Mixed Hardwood Forest...the population found on the east side of SR 1125 is in a more evevated area dominated by white pine and mixed hardwoods...vegetation within this area includes sourwood, American holly (Ilex opaca), red maple (Acer rubrum), white oak (Q. alba), Virginia pine (P. virginiana), white pine, and mountain laurel. The herbaceouse and vine layer include blueberry (Vaccinium spp.), smilax, and grape vine (Vitis spp.).The west side of SR 1115 is lower...Vegetation includes more hardwoods and fewer pines that the east side of hte road. Red oak, American holly, white oak, mountain larurel, red maple, stawberry bush (Euounymus americanus), dogwood (Cornus florida), cranefly orchid (Tipularia discolor), and pipsissiwa (Chimaphila maculata) are common plants. This site is closer to Camp Creek and is moister than that on the east side of the road. Immediately adjacent to this site is an area that have been recently timbered. Portions of this site that are not included in the NCDOT ROW could be threatened by additional timbering activities (HDR 2005).

Min. Elevation 1,060 **feet** **Max. Elevation** 1,120 **feet**

EO Observed Area 0.20 **acres**

Rep Accuracy High

Separation Comments EO is not located within 2.0 kilometers of another known EO of the same species; EO is located within 3.0 kilometers (straight line distance) of EO 058 (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Ms. Carole Jean Smith, 1498 Camp Creek Rd, Hickory, NC 28602-8647	2012, 2015 permission granted to survey

Owner Comments

Management Comments This site has been timbered and is part of a USFWS multi-year monitoring project (Padgett 2012)

Protection Comments This site has no formal protection and has recently been timbered (Padgett 2012). -- Portions of this site that are not included in the NCDOT ROW could be threatened by additional timbering activities (HDR 2005).

Additional Topics NCDOT is responsible for monitoring this population per our agreement with USFWS as stated in the Lovelady Road BO. Much of this population, which includes the east and west side of SR 1115, is outside of the ROW (Hermann 2010). "This non-TIP NCDOT Division 12 road construction project.. may affect all of or portions of [EO 158]...Per a September 22, 2002 conversation with Trish Simon, NC Division 12 Environmentsal Officer, the project is estimated to directly impact approximately 20-30 DFHL plants. Project construction has also been delayed for at least a couple of years" (Bassette 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21386

EO Number 158

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.
G10DOT02NCUS	Herman, D.W. 2010. Dwarf-flowered Heartleaf, Hexastylis naniflora, Inventory and Monitoring Report. NCDOT Raleigh, NC

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Wichmann **Transcription Date** 2005-06-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21387

EO Number 159 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, Micol Creek tibutary near SR 1547 (Sub EO of 178)
NCDOT TIP: R-2824
NCDOT TIP: B-3621 bridge replacement on SR 1547 over Michol Creek

Directions Catawba River: Hoyle Creek-Micol Creek, tributary near SR 1547: This is a sub EO of Parent EO 178 (Wichmann 2005). "Site is located on a north-facing slope along SR 1547 in Burke County, NC near Micol Creek" (HDR 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2005-Spr

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2013**: plants present but no count reported (NCDOT 2015)
2011: 2182 plants counted on 2 November (NCDOT 2011)
2005: 5,650 plants estimated, based on counts from 15 sample plots 1/100 acres in size established over approximately 2.19 acres; impacts to be determined (HDR personnel 2005).

Source Feature Identifier 28151
Source Feature Locator Hoyle Creek-Micol Creek, tributary near SR 1547
Source Feature Descriptor 2005; HDR

Surveyors HDR personnel
HARP personnel
Matt Haney, NCDOT

Survey Type Qualitative ground survey

Survey Date 2013 **First Observation Date** 2004-Fall **Last Observation Date** 2013

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description North-facing slope. "Vegetation along these slopes is representative of a Mesic Mixed Hardwood Forest, and is situated adjacent to a residence and Micol Creek. At this site, vegetation transitions from a mixed pine hardwood forest to pine forest as the slope turns to the west. The mixed hardwood forest includes a canopy containing mockernut hickory (*Carya tomentosa*), yellow poplar (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), and white pine (*Pinus strobus*). Rhododendron (*Rhododendron* sp.), mountain laurel (*Kalmia latifolia*), and sourwood (*Oxydendrum arboreum*) are prevalent at this site. In addition, an herb and vine layer is present including galax (*Galax urceolata*), partridge berry (*Mitchella repens*), and
smilax (*Smilax* sp.)" (Ref. U05HDR01NCUS).

Min. Elevation 1,080 **feet** **Max. Elevation** 1,170 **feet**

EO Observed Area 2.19 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21387

EO Number 159 **Parent EO Number** 178

Rep Accuracy High

Separation Comments Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore independent Parent EOs (Wichmann and Franklin 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics Approximately 5,650 plants estimated prior to NCDOT impacts, number of plants impacted is to be determined (HRD personnel 2005).

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F15DOT04NCUS	N.C. Department of Transportation Division 13. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Wichmann **Transcription Date** 2005-06-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21388

EO Number 160 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, Lovelady 2 (east) (Sub EO of EO 178).
NCDOT TIP: R-2824 SR 1546 Lovelady Road

Directions Catawba River: Hoyle Creek-Micol Creek, NC DOT Lovelady site 2 (east). This is a sub EO of Parent EO 178 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-08-05

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2014:** Site visited by Smail on 14 May 2013; plants present but no count reported (Smail 2013).
2009: Site visted by Herman and Renninger on 07 April 2009; plants present and flowering, no count made (Bassette 2009).
2008: 851 plants counted in 1.24 acreas by NCDOT biologists on 05 August 2008. This survey was performed outside of the optimal survey window (Bassette 2009).
2004: 1,484 plants estimated based on 11 1/100 acre sample plots over 1.51 acres. Surveys made in October and November 2004; confirmation of species made in April 2005 by Matthews (HDR personnel 2005, Bassette 2009).

Source Feature Identifier 52940
Source Feature Locator Hoyle Creek-Micol Creek, NC DOT Lovelady site 2 (east)
Source Feature Descriptor 2009;NCDOT

Surveyors HDR personnel
HARP personnel
NCDOT personnel
Ed Smail, Michael Baker Corp.

Survey Type Qualitative ground survey

Survey Date 2013-05-14 **First Observation Date** 2004-Fall **Last Observation Date** 2013-05-14

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description ...gentle northeast slope with a mixed pine hardwood forest...Dominant trees include white pine, Virginia pine, shortleaf pine, yellow poplar, sourwood, white oak, mountain laurel, southern red oak (*Q. falcata*), American holly, red maple, and sassafras. Ground cover includes running-pine (*Lycopodium flabelliforme*) and rattlesnake fern. (HDR 2005).

Min. Elevation 1,080 **feet** **Max. Elevation** 1,200 **feet**

EO Observed Area 1.51 **acres**

Rep Accuracy Medium

Separation Comments Principal EO 178 is approximately 1.5 air kilometers from principal EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore independent principal EOs (Wichmann and Franklin 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21388

EO Number 160 **Parent EO Number** 178

General Comments: Dennis Herman (NCDOT) and Heather Renninger (NCDOT) visted this site on 07 April 2009 to confirm the identity of the Hexastylis individuals. Flower morphology was examined in 60-70 randomly selected plants and all were consistent H. naniflora characteristics. No evidence of other Hexastylis species was found at this site (Bassette 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics NCDOT project construction (R-2824) will incur adverse effects (direct and indirect impacts) to 0.0419 acres of the 1.24 acre population, cause a total loss of 118 of 851 plants (Bassette 2009).

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
F13CON01NCUS	2013. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.

VERSION

Version Author Amoroso **Version Date** 2015-10-15

Transcribed By Wichmann **Transcription Date** 2005-06-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21389

EO Number 161 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, Lovelady 1(west): (Sub EO of EO 178).
NCDOT TIP: R-2824 SR 1546 Lovelady Road

Directions Catawba River: Hoyle Creek-Micol Creek, NC DOT Lovelady site 1 (west): This is a sub EO of Parent EO 178 (Wichmann 2005). "This 2.27 acre site is on the south side of the existing Lovelady Road on a moist, steep northwest facing slope that drains toward a tributary to Micol Creek" (HDR 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-08-06

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2009:** Site visted by Herman and Renninger on 07 April 2009; plants present and flowering, no count made (Bassette 2009).
2008: 2,754 plants counted in 2.33 acres by NCDOT staff on 05-06 August 2008. This survey was performed outside of the optimal survey window (Bassette 2009).
2004: 6,123 plants estimated: "Six 1/100 acre plots were used to determine the population count. This site averaged 27000 Hexastylis plants per acre, and 6,123 total." Surveys made in October and November 2004; confirmation of species made in April 2005 by Matthews (HDR 2005).

Source Feature Identifier 52939

Source Feature Locator Hoyle Creek-Micol Creek, NC DOT Lovelady site 1 (west)

Source Feature Descriptor 2009; NCDOT

Surveyors HDR personnel
HARP personnel
NCDOT personnel
Dennis Herman, NCDOT
Heather Renninger, NCDOT

Survey Type Quantitative ground survey

Survey Date 2009-04-07 **First Observation Date** 2004-Fall **Last Observation Date** 2009-04-07

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description ...on a moist, steep northwest facing slope that drains toward a tributary to Micol Creek...The site is dominated by mesic mixed hardwoods consisting of American beech, sweetgum, northern red oak, black oak (*Q. velutina*), black cherry (*Prunus serotina*), mockernut hickory, red maple, dogwood, American holly, white oak, sourwood, yellow poplar, mountain laurel, rhododendron, and white pine. Ground cover includes Christmas fern, rattlesnake fern (*Botrychium virginianum*), partridge berry, smilax, grape, galax, blackberry (*Rubus* spp.), devil's bit (*Chamaelirium luteum*), ebony spleenwort (*Asplenium platyneuron*) and Japanese honeysuckle (HDR 2005).

Min. Elevation 1,030 **feet** **Max. Elevation** 1,060 **feet**

EO Observed Area 2.27 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21389

EO Number 161 **Parent EO Number** 178

Rep Accuracy Medium

Separation Comments Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town)greater than 1 kilometer wide and are therefore independent Parent EOs (Wichmann and Franklin 2005).

General Comments: Dennis Herman (NCDOT) and Heather Renninger (NCDOT) visted this site on 07 April 2009 to confirm the identity of the Hexastylis individuals. Flower morphology was examined in over 200 randomly selected plants and all were consistent H. naniflora characteristics. No evidence of other Hexastylis species was found at this site (Bassette 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2016-03-23

Transcribed By Wichmann **Transcription Date** 2005-06-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21393

EO Number 162 **Parent EO Number** 179

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Clark Creek, Miller Branch, tributary E of Catawba Memorial Hospital (Sub of 179)
NCDOT non-TIP Division 12 Project at SR 1473 near Miller Branch
NCDOT TIP: R-2824

Directions South Fork Catawba River: Clark Creek, Miller Branch, tributary east of Catawba Memorial Hospital and south of SR 1592. This is a sub EO of Parent EO 179 (Wichmann 2005). "This site is located on a north facing slope on the south side of SR 1473 (8th Avenue) in Catawba County near Miller Branch" (HDR 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-Spring

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data 2012: 21 plants counted on 17 December (Carolina Ecosystems for NCDOT, 2012).
2010: 23 plants counted on 20 December 2010 (Hermann 2010)
2005: 25 plants over 0.04 acres (HDR 2005).

Source Feature Identifier 28167
Source Feature Locator South Fork Catawba River: Clark Creek, Miller Branch
Source Feature Descriptor 2005; NCDOT Consultant

Source Feature Identifier 90105
Source Feature Locator Clark Creek, Miller Branch, tributary east of Catawba Memorial Hospital and south of SR 1592
Source Feature Descriptor 2012; NCDOT

Surveyors HRD
HARP
Tim Bassette, NCDOT
Dennis Hermann, NCDOT
Phil May, Carolina Ecosystems
Brian Smith, Carolina Ecosystems
James Pflaum, Carolina Ecosystems

Survey Type Quantitative ground survey

Survey Date 2012-12-17 **First Observation Date** 2005-Fall **Last Observation Date** 2012-12-17

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description North facing slope...primarily of Mesic Mixed Hardwood Forest...Vegetation includes chestnut oak (*Q. prinus*), white oak, sourwood, mockernut hickory, red oak, strawberry bush, bellwort (*Uvularia sessilifolia*), blueberry, sassafras (*Sassafras albidum*), Solomon's seal (*Polygonatum spp.)*, and smilax...It is possible that *Hexastylis* (particularly *H. naniflora*) habitat improves on the north side of SR 1473 as the slope is lower and closer to Miller Branch. However, extensive kudzu (*Pueraria* spp.) is growing along the road and continues down the slope; no *Hexastylis* plants were observed. Should the invasive species cross the road, it would be a serious threat to this population (HDR 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21393

EO Number 162 **Parent EO Number** 179

Min. Elevation 1,030 **feet** **Max. Elevation** 1,070 **feet**

EO Observed Area 0.04 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Kudzu growing within the clear-cut north of the site and in the ditch adjacent to the site may significantly alter the habitat if it encroaches from the road (NCDOT 2012).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G10DOT02NCUS	Herman, D.W. 2010. Dwarf-flowered Heartleaf, Hexastylis naniflora, Inventory and Monitoring Report. NCDOT Raleigh, NC
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Wichmann **Transcription Date** 2005-06-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21394

EO Number 163 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek, Long Branch, headwaters near Shiloh (Sub of 177).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 9 (in part)

Directions Broad River: Floyds Creek, Long Branch, headwaters northeast of Shiloh. This is a sub EO of parent EO 177 (Wichmann 2005). "From I-74, head north on US 221, turn left on Poors Ford Road (South). Turn left on Woodland Estate. The site is on the left near the end of the road, downslope from the clearcut" (Renninger 2005).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2015-05-20

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2016: This sub occurrence was re-delineated on 11 May 2016 and is 2.38 acres (Bloom 2016).
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015). This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 9, although it was not surveyed.
2005: 657 clumps over 0.83 acres, in leaf and flower, seedlings and vegetative reproduction evident, only a few plants left in clearcut, majority in wetland (Renninger 2005).

Source Feature Identifier 68184
Source Feature Locator Long Branch, south of Davenport Road/Mountain View
Source Feature Descriptor Padgett 2012

Source Feature Identifier 89898
Source Feature Locator Broad River: Floyds Creek, Long Branch, headwaters northeast of Shiloh
Source Feature Descriptor Bloom 2016

Surveyors Heather Renninger, H.W. Lochner
James Padgett, NHP
Eric Galamb, H.W. Lochner
Tim Bassette, H.W. Lochner
Brian Dustin, H. W. Lochner
Emily Rackley, H. W. Lochner
Sean Bloom, Catawba Land Conservancy

Survey Type Quantitative ground survey

Survey Date 2016-05-11 **First Observation Date** 2005-03-30 **Last Observation Date** 2016-05-11

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors , and areas of potential indirect effects were not surveyed (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21394

EO Number 163 **Parent EO Number** 177

DESCRIPTION

General Description LOW ELEVATION SEEP (PIEDMONT/MOUNTAIN SPRINGHEAD SUBTYPE – Canopy is primarily *Acer rubrum* and includes *Liriodendron tulipifera, Nyssa sylvatica*, and less so *Fraxinus pennsylvanica*. The sub canopy is primarily *Oxydendrum arboretum, Ilex opaca,* and *Nyssa sylvatica.* The shrub layer is predominately *Viburnum nudum var. nudum, Amelanchier arborea, Alnus serrulata, Vaccinium corymbosum,* and *Itea virginica*. Much of the shrub layer is bound up with *Smilax laurifolia* and less often *Smilax rotundifolia*. The herbaceous layer is dominated by *Parathelypteris noveboracensis* but also included *Arundinaria gigantea*, *Osmundastrum cinnamomeum, Osmunda spectabilis*, and *Lorinseria areolata*. Other herbaceous plants that were less prevalent include *Arisaema triphyllum, Medeola virginiana,* and *Mitchella repens*. (Bloom 2016)
Wetland/streambank and clearcut; no associated NCHP natural community, medium quality; Associated species in wetland/streambank include: Acer rubrum, Liriodendron tulipifera, Ilex opaca, Ligustrum sinense, Smilax laurifolia, oxydendron arboretum, and Arundinaria gigantea; Associated species in clearcut include: Acer rubrum, Carya tomentosa, and Andropogon virginicus (Renninger 2005).

Min. Elevation 1,100 **feet** **Max. Elevation** 1,200 **feet**

EO Observed Area 0.83 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 kilometers of on another and area not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

General Comments: Observed threats: Invasive Species (Primarily Rosa multiflora, Lonicera japonica, and Ligustrum sinense) – Found at the western end of the EO. Threat: Moderate / Scope: Low / Immediacy: High (Bloom 2016).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Mr. Joseph Larry Yelton, 274 Woodland Estates, Rutherfordton, NC 28139	2012 permission granted, 2015 no response, 2016 reminder postcard mailed
Private individual	Stroud and Conner	2012 no response

Owner Comments

Management Comments May incur further impacts from clearcutting due to invasive species (Renninger 2005).

Protection Comments

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). Other threats observed include Incompatible forestry practices and development on adjacent properties, next to the population (Padgett 2012).

DOCUMENTATION

Reference Code	Citation
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

Specimen
NCSU

VERSION

Version Author Robinson **Version Date** 2016-08-04

Transcribed By Wichmann **Transcription Date** 2005-06-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21395

EO Number 164 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek, Long Branch, unnamed tributary 1.2 mile NW of Danieltown (Sub of 177)
NCDOT TIP: R-2233A&B
USFWS Flex Fund Monitoring Site 9 (in part)

Directions Broad River: Floyds Creek, Long Branch, unnamed tributary about 1.2 road miles north west of Danieltown, just south west of US 221. This is a Sub EO of Parent EO 177 (Wichmann 2005). Ravine southwest of 221 along a tributary located 0.4 mile noth of where US 221 crosses over Long Branch (Wichmann 2005). Shiloh: 1.4 miles northwest of Danieltowm. West of US 221 along a small unnamed stream near the exit ramp of US 74 (Padgett 2005). "From I-74, US 221 South. Immediate right on logging road just north of Visitor Center. Follow road toward I-74 at split. Plants are along first stream" (Renninger 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2005-03-31

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2016:** 537 plants counted by Sean Bloom in monitoring plots on 11 May 2016. (Bloom 2016).
2015: This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 9, although it was not surveyed. 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 5.21 acres (Padgett and Feldman 2015).
2013: 2012 and 2013 data is part of the status survey monitoring data for Principle EO 177 (Padgett 2013). Padgett and Israel observed 240 plants in a permanent monitoring plot on 7 May 2013 (Padgett 2013).
2012: Padgett counted 204 plants for permant monitoring plot in July 2012 (Padgett 2012).
2005: 657 clumps over 0.6 acres in leaf and flower, seedling and vegetative reproduction evident (Renninger 2005).

Source Feature Identifier 68185
Source Feature Locator Camp Branch, south of Davenport Road/Mountain View, EO 164 plot
Source Feature Descriptor Padgett EO 164 plot

Source Feature Identifier 68203
Source Feature Locator Long Branch, south of Davenport Road/Mountain View
Source Feature Descriptor Padgett 2012

Source Feature Identifier 89902
Source Feature Locator Floyds Creek, Long Branch, unnamed tributary about 1.2 road miles north west of Danieltown
Source Feature Descriptor Bloom 2016

Surveyors Heather Renninger, H.W. Lochner
James Padgett, NHP
Brian Dustin, H.W. Lochner
Emily Rackley, H.W. Lochner
Tim Bassett, H.W. Lochner
Sean Bloom, Catawba Land Conservancy
Kimberly Israel, NHP

Survey Type Quantitative ground survey

Survey Date 2016-05-11 **First Observation Date** 2005-03-31 **Last Observation Date** 2016-05-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21395

EO Number 164 **Parent EO Number** 177

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Mesic Mixed Hardwood Forest (Piedmont Subtype) – The slope has a canopy consisting of *Liriodendron tulipifera, Quercus montana, Liquidambar styraciflua*, and *Quercus rubra*. Other canopy trees include *Prunus serotina* and *Sassafras albidum*. The sub-canopy includes *Cornus florida, Nyssa sylvatica*, and *Ilex opaca*. The shrub layer is open but includes *Kalmia latifolia, Rhododendron periclymenoides*, and saplings of canopy trees. The herbaceous layer was sparse but included U*vularia sp., Mitchella repens, Polystichum acrostichoides, Parathelypteris noveboracensis, Chamaelirium luteum*, and *Tipularia discolor*. (Bloom 2016)

LOW ELEVATION SEEP (TYPIC SUBTYPE) – Found between toe of slope and the tributary. Canopy is primarily *Acer rubrum* and *Liquidambar styraciflua*, but includes some *Oxydendrum arboreum*. The shrub layer includes *Calycanthus floridus*, *Viburnum nudum var. nudum*, *Ilex montana*, *Aronia arbutifolia*, and *Vaccinium corymbosum*. The herbaceous layer is dominated by *Parathelypteris noveboracensis* but also included *Osmundastrum cinnamomeum, Osmunda spectabilis*, and *Lorinseria areolata*. Other herbaceous plants that were less prevalent include *Arisaema triphyllum* and *Mitchella repens*. (Bloom 2016)

Mesic Mixed Harwood grading into Dry-Mesic Oak-Hickory; medium quality. Adjacent areas extensively logged and/or thinned. Associated species: Quercus alba, Pinus serotina, Liriodendron tulipifera, Ilex opaca, Quercus montana, Carya tomentosa [C. alba], Kalmia latifolia, Ligustrum sinense, Polystichum acrostichoides, Tipularia discolor, Lonicera japonica, and Smilax sp. (Renninger 2005).

Min. Elevation 1,090 **feet** **Max. Elevation** 1,110 **feet**

EO Observed Area 0.60 **acres**

Rep Accuracy High

Separation Comments This sub EO is located very near EO 164, but the two are separated by US 221 and are therefore treated as two Sub EOs for data organization; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: Observed threats: Invasive Species (Primarily Rosa multiflora, Lonicera japonica, and Ligustrum sinense) – Found at the western end of the EO. Threat: Moderate / Scope: Low / Immediacy: High (Bloom 2016)

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	JOSEPH W WRIGHT JR, PO BOX 1331, FLAT ROCK, NC 28731	2012 no response
State government	NCDOT US 221	

Owner Comments 38+ acres for sale, 828-429-5831 (Renninger 2005).

Management Comments

Protection Comments May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B (Renninger 2005).

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B (Renninger 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21395

EO Number 164 **Parent EO Number** 177

DOCUMENTATION

Reference Code	Citation
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

Specimen

NCSU

VERSION

Version Author Robinson **Version Date** 2016-07-27

Transcribed By Wichmann **Transcription Date** 2005-06-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21396

EO Number 165 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown (Sub of 177).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 9 (in part)

Directions Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown. This is a sub EO of parent EO 177 (Wichmann 2005). See map for details. "I-74 to US 221 North; left of first paved driveway to left (with green metal gate); site left of driveway in seep just before house (Renninger 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2005-04-05

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015).
2005: 279 clumps over 0.35 acres in leaf and flower, seedlings and vegetative reproduction evident (Renninger 2005).

Source Feature Identifier 49049

Source Feature Locator Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown

Source Feature Descriptor 2005; Lochner

Surveyors Heather Renninger, H.W. Lochner
T Bassette, H.W. Lochner
E. Rackley, H.W. Lochner
B. Dustin, H.W. Lochner

Survey Type Quantitative ground survey

Survey Date 2005-04-05 **First Observation Date** 2005-04-05 **Last Observation Date** 2005-04-05

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Pine plantation - some hardwoods; high quality; Associated species: Liriodendron tulipifera, Pinus serotina, Quercus alba, Smilax laurifolia, Pinus teada, Aronia arbutifolia, Smilax laurifolia, Acer rubrum, Cornus florida, Ilex opaca, Carya tomentosa [C. alba], Quercus falcata, Pteridium aquilinum (Renninger 2005).

Min. Elevation 1,090 **feet** **Max. Elevation** 1,100 **feet**

EO Observed Area 0.35 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21396

EO Number 165 **Parent EO Number** 177

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Marge and Max Hamrick	828-286-3271

Owner Comments owners interested in protection (Renninger 2005).
Owners did not respond to 2012 letter requesting permission to sruvey.

Management Comments

Protection Comments Owners interested in protection (Renninger 2005).

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Specimen
NCSU

VERSION

Version Author Amoroso **Version Date** 2016-03-21

Transcribed By Wichmann **Transcription Date** 2005-06-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21397

EO Number 166 **Parent EO Number** 177

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek, Long Branch, tributary 1.7 miles NW of Danieltown and NE 0.3 mile from US 211 (Sub of 177).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 9 (in part)

Directions Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 mile northwest of Danieltown and northeast 0.3 mile from US 221. This is a sub EO of parent EO 177 (Wichmann 2005). "From I-74, US 221 North, right on Birch Hutchins Road. Left on Iverson Road. Plants are to the east of road along first stream" (Renninger 2005).

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2005-03-31

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 9, although it was not surveyed.
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015).
2005: 201 clumps over .75 acres in leaf and flower, seedling and vegatative reproduction evident (Renninger, 2005).

Source Feature Identifier 49048

Source Feature Locator Floyds Creek, Long Branch, unnamed tributary 1.7 mile northwest of Danieltown

Source Feature Descriptor 2005; Lochner

Surveyors Heather Renninger, H.W. Lochner
Eric Galamb, H.W. Lochner
Tim Bassette, H.W. Lochner
Brian Dustin, H.W. Lochner
Emily Rackley, H. W. Lochner

Survey Type Quantitative ground survey

Survey Date 2005-03-31 **First Observation Date** 2005-03-31 **Last Observation Date** 2005-03-31

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B) (Wichmann 2005).

DESCRIPTION

General Description Small streamhead and Mesic Mixed Hardwood; site is bisected by a dirt road; Hexa nan plant found on both sides of the road. Associated species found in streamhead area include: Osmunda cinnamomea, Thelypteris noveboracensis, Photinia pyrifolia [Aronia arbutifolia], Rhododendron pariclymenoides, Mitchella repens, Medeola virginiana, Osmunda regalis, Woodwardia areaolata, Chamaelirium luteum, Kalmia latifolia, Quercus alba, Smilax rotundifolia, Ilex Af. montana, Quercus falcata, Cornus florida, Prenanthes sp., Polygonatum biflorum, Euonymus americana, Liquidambar styraciflua, Liriodendron tulipifera (several small), Quercus montana, and Prunus serontina; Associated species found in the Mesic Mixed Hardwood area includes: Vitus rotundifolia, Chamaelirium luteum, Liquidambar styraciflua, Liriodendron tulipifera, Prenanthes sp., Prunus serontina, Mitchella repens, Maianthemum racemosum, Acer rubrum, Quercus phellos, and Vaccinium pallidum (Wichmann and Franklin 2005). Mesic Mixed Hardwood; medium quality; associated species:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21397

EO Number 166 **Parent EO Number** 177

Quercus alba, Acer rubrum, Pinus serotina, Kalmia latifolia, Carya tomentosa [C. alba], Liriodendron tulipifera, Ilex opaca, Oxydendron arboretum, Polystichum acrostichoides, Tipularia discolor, Lonicera sempervirens (Renninger, 2005).

Min. Elevation 960 **feet** **Max. Elevation** 990 **feet**

EO Observed Area 0.75 **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Crowe Family Trust	2012 no response

Owner Comments

Management Comments

Protection Comments EO is not located within a Registered/Dedicated Heritage Area, nor managed area (Wichmann 2005). Only Hexa nan population in the Yadkin River Basin; Small stream heads in this area need protection, conversion to peach orchards, ponds, etc. is a threat (Padgett 2005). Streamhead community with Hexa nan is uncommon (Wichmann 2005).

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). May incur secondary impacts from Rutherfordton Bypass (NCDOT TIP No. R2233B) (Renninger, 2005).

DOCUMENTATION

Reference Code	Citation
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Specimen

NCSU

VERSION

Version Author Amoroso **Version Date** 2016-03-21

Transcribed By Wichmann **Transcription Date** 2005-06-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21398

EO Number 167 **Parent EO Number** 176

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Davenport Road/Mountain View Rare Plant Site

Survey Site
Broad River: Cleghorn Creek/Stonecutter Creek, US 221, tributary NW of Davenport Road (sub EO of 176)
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 8 (in part)

Directions Broad River: Cleghorn Creek/Stonecutter Creek, US 221, tributary located northwest of Davenport Road. This is a sub EO of principal EO 176 (Wichmann 2005). "I-74 to US221 North. Right of Poors Ford Road. Left on Davenport Rd. Go to the end of road. Plants are downslope from house on all sides" (Renninger 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2015-05-19

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.

2016: Bloom re-delinated the population and collected monitoring data in monitoring plots on 20 May 2016 (Bloom). See parent EO 176 for data.

2015: 778 plants counted on 19 May 2015 in 0.68 acres of monitoring plots in sub EOs 167, 170, and 176. Estimated 6,400 total plants covering the entire 6.84 acres (Padgett and Feldman 2015).

2014: Padgett counted 797 plants within monitoring plots for principal EO 176 on 20 May 2014 and estimated 8000 plants covering 6.84 acres of mapped area (Padgett 2014).

2013: Monitoring data is part of monitoring data for principle EO 176 (Padgett 2103).

2012: Padgett counted 367 plants for two permanent monitoring plots on 24 July 2013 (Padgett 2013). Padgett counted 351 plants for two permanent monitoring plots on 21 July 2012 (Padgett).

2005: 3,469 over 5.05 acres, seedlings and vegetative reproduction evident (Renninger 2005).

Source Feature Identifier 68206
Source Feature Locator Davenport Road/Mountain View Rare Plant Site
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68207
Source Feature Locator Davenport Road/Mountain View Rare Plant Site, EO 167 plot
Source Feature Descriptor Padgett EO 167 plot

Source Feature Identifier 89952
Source Feature Locator Broad River: Cleghorn Creek/Stonecutter Creek, US 221, tributary located northwest of Davenport Road
Source Feature Descriptor Bloom 2016

Surveyors Heather Renninger, H.W. Lochner
E. Fentress, H.W. Lochner
E. Galamb, H.W. Lochner
B. Dustin, H.W. Lochner
T. Bassette, H.W. Lochner
James Padgett, NCNHP
Sean Bloom, CLC

Survey Type Quantitative ground survey

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21398

EO Number 167 **Parent EO Number** 176

Survey Date 2005-04-06 **First Observation Date** 2005-04-06 **Last Observation Date** 2005-04-06

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Very High quality site; Dry-Mesic Oak-Hickory and Mesic Mixed Hardwood; Associated species: Hexastylis arifolia, Carya tomentosa [C. alba], Carya glabra, Fagus grandiflora, Visis sp., Liriodendron tulipifera, Quercus falcata, Quercus coccinea, Quercus rubra, Hepatica americana, Kalmia latifolia, Rhododendron nudiflorum [R. pariclymenoides], Acer rubrum, Oxydendron arboretum (Renninger 2005).

Min. Elevation 850 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 5.05 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Carl Pruett	
Private individual	Williams Family Trust,	2012 letter returned, no forwarding address
Local government	Town of Rutherfordton	2012 no response

Owner Comments

Management Comments

Protection Comments "Worth trying to protect" (Renninger 2005).

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

Specimen

NCSU

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Wichmann **Transcription Date** 2005-06-09

This is a sub EO of principal EO 176; all sub EOs are clipped to the principal EO and filed numerically within the Element File (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21399

EO Number 168 **Parent EO Number** 176

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Davenport Road/Mountain View Rare Plant Site

Survey Site
Broad River: Cleghorn Creek/Stonecutter Creek: tributary NE of Pate Road (sub EO of 176).
NCDOT TIP: R-2233

Directions Broad River: Cleghorn Creek/Stonecutter Creek: tributary north of Pate Road. This is a sub EO of principal EO 176. "From I-74[?], US 221 North, right on Pears Ford Road (North), Left on Pate Road, Right at the driveway for house # 260. Plants are located along stream on both sides of the driveway" (Renninger 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2005-03-30

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2005:** 1,113 clumps over 2.35 acres; seedlings and vegetate reproduction evident (Renninger 2005).

Source Feature Identifier 68505

Source Feature Locator Davenport Road/Mountain View Rare Plant Site

Source Feature Descriptor Padgett 2012

Surveyors Heather Renninger, H.W. Lochner
Tim Bassette, H.W. Lochner
Emily Rackley, H.W. Lochner
Brian Dustin, H.W. Lochner

Survey Type Quantitative ground survey

Survey Date 2005-03-30 **First Observation Date** 2005-03-30 **Last Observation Date** 2005-03-30

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Dry-mesic Oak Hickory Forest; high quality; Associated species: Lonicera japonica, Euonymus americana, Quercus rubra, Quercus montana, Quercus alba, Carya tomentosa [C. alba], Liriodendron tulipifera, Liquidambar Styraciflua, Acer rubrum, Ligustrum sinense, Cornus florida, Oxydendron arboreum, Hexastylis arifolia (Renninger 2005).

Min. Elevation 980 **feet** **Max. Elevation** 1,020 **feet**

EO Observed Area 2.35 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21399

EO Number 168 **Parent EO Number** 176

Owner Type	Owner Name	Notes
Private individual		

Owner Comments

Management Comments

Protection Comments

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

Specimen

NCSU

VERSION

Version Author Amoroso **Version Date** 2015-10-14

Transcribed By Wichmann **Transcription Date** 2005-06-09

This is a sub EO of principal EO 176; all sub EOs are clipped to the principal EO and filed numerically within the Element File (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21400

EO Number 169 **Parent EO Number** 176

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Davenport Road/Mountain View Rare Plant Site

Survey Site
Broad River: Cleghorn Creek/Stonecutter Creek: US 221, trib NE of Daven Port Rd, near powerline (Sub of 176).
NCDOT TIP: R-2233

Directions Broad River: Cleghorn Creek/Stonecutter Creek Cleghorn Creek/US 221, tributary north east of Daven Port Road, near powerline cut. This is a sub EO of principal EO 176 (Wichmann 2005). I-74 to US 21 North. Right on Poor's Ford Road; Left on Daven Port Road. Go almost to the end of road (gravel). Plants are downslope to north of road near large powerline crossing (Renninger 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2016-05-18

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data 2016: 35 individuals counted on 18 May 2016. Population re-delinated to higher accuracy polygon in 2016 (Bloom 2016).
2012: Failed to find by Padgett on 21 July 2012 (Padgett 2012).
2005: 42 clumps over 0.39 acres, seedlings and vegetative reproduction evident (Renninger 2005).

Source Feature Identifier 28179
Source Feature Locator Cleghorn Creek/US 221, tributary north east of Daven Port Road
Source Feature Descriptor 2005; Lochner

Source Feature Identifier 89937
Source Feature Locator Davenport Road / Mountain View Rare Plant Site
Source Feature Descriptor Bloom 2016

Surveyors Heather Renninger, H.W. Lochner
James Padgett, NHP
B. Dustin, H.W. Lochner
T. Bassette, H.W. Lochner
E. Rachley, H.W. Lochner
E. Galamb, H. W. Lochner
Sean Bloom, CLC

Survey Type Quantitative ground survey

Survey Date 2016-05-18 **First Observation Date** 2005-04-06 **Last Observation Date** 2016-05-18

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description MESIC MIXED HARDWOOD FOREST (PIEDMONT SUBTYPE) – This community is found on a west-facing slope above a 1st order tributary. The canopy consists of Fagus grandiflora, *Carya tomentosa*, *Quercus rubra*, and *Liquidambar styraciflua*. The shrub layer includes *Kalmia latifolia*, *Ilex opaca*, *Amelanchier arborea, Rhododendron periclymenoides, Calycanthus floridus, Cornus florida, Rosa multiflora, and Elaeagnus umbellata.* The herbaceous

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21400

EO Number 169 **Parent EO Number** 176

layer includes *Mitchella repens, Polystichum acrostichoides, Parathelypteris noveboracensis, Arundinaria gigantea,* and *Hexastylis heterophylla.* (Bloom 2016)
Medium quality; Dry-Mesic Oak-Hickory and Mesic Mixed Hardwood; associated species include: Hexastylis arifolia, Carya tomentosa [C. alba], Quercus falcata, Smilax glauca, Visis sp., Oxydendron arboretum; powerline right-of-way adjacent to site; invasives have easy access to heartleaf population (Renninger 2005).

Min. Elevation 900 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 0.39 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Brenda and Archer Willis	2012 and 2012 permission to survey granted

Owner Comments

Management Comments

Protection Comments

Additional Topics No rosettes found in the right-of-way as previously indicated by the shapefile. "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.

Specimen
NCSU

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Wichmann **Transcription Date** 2005-06-09

This is a sub EO of principal EO 176; all sub EOs are clipped to the principal EO and filed numerically within the Element File (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21401

EO Number 170 **Parent EO Number** 176

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Davenport Road/Mountain View Rare Plant Site

Survey Site
Broad River: Cleghorn Creek/Stonecutter Creek: Tributary S of Pate Road (sub EO of EO 176).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 8 (in part)

Directions Broad River: Cleghorn Creek/Stonecutter Creek, tributary south of Pate Road (sub EO of 176), approximately 0.33 miles west of the intersection of Poors Ford Road and Pate Road. " I-74 to US 221 North. Right on Poor's Ford Road. Left on Pate Road. Plants are on south side of Road, partially in clearcut" (Renninger 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2015-05-19

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2016:** 191 plants counted on 18 May 2016 by Bloom in 0.25 acre of monitoring plot; entire sub occurrence delimited in 2016, 0.57acres (Bloom 2016).
2015: 778 plants counted on 19 May 2015 in 0.68 acres of monitoring plots in sub EOs 167, 170, and 176. Estimated 6,400 total plants covering the entire 6.84 acres (Padgett and Feldman 2015).
2014: Padgett counted 797 plants within monitoring plots for principal EO 176 on 20 May 2014 and estimated 8000 plants covering 6.84 acres of mapped area (Padgett 2014).
2013: Monitoring data is part of monitoring data for Principle EO 176 (Padgett 2013). Padgett and Israel counted 413 plants in permanent monitoring plot on 17 July 2013 (Padgett, 2013).
2012: 287 plants counted in permanent monitoring plot by Padgett and Israel on 18 July 2012 (Padgett 2012).
2005: 340 stems over 0.57 acres; seedlings and vegetative reproduction evident (Renninger 2005).

Source Feature Identifier 68208
Source Feature Locator Davenport Road/Mountain View Rare Plant Site
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68209
Source Feature Locator Davenport Road/Mountain View Rare Plant Site, EO 170 plot
Source Feature Descriptor Padgett EO 170 plot

Source Feature Identifier 89939
Source Feature Locator Cleghorn Creek/Stonecutter Creek, tributary south of Pate Road
Source Feature Descriptor Bloom 2016

Surveyors James Padgett, NHP
Heather Renninger, H.W. Lochner
B. Dustin, H.W. Lochner
T. Bassette, H.W. Lochner
E. Rackley, H.W. Lochner
Sean Bloom, CLC
Maxwell Feldman, NHP intern

Survey Type Quantitative ground survey

Survey Date 2016-05-18 **First Observation Date** 2005-04-06 **Last Observation Date** 2016-05-18

Data Sensitive Element N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21401

EO Number 170 **Parent EO Number** 176

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

DESCRIPTION

General Description Half clearcut; half Mesic Mixed Hardwoods; Associated species include: Carya tomentosa [C. alba], Fagus grandifolia, Fraxinus americana, Quercus alba, Quercus falcata, Quercus rubra, Hexastylis arifolia, Kalmia latifolia, Ligustrum sinense, Polystichum acrostichoides, Tipularia discolor, Carpinus caroliniana, Cornus florida, Ilex opaca (Renninger 2005).

Min. Elevation 1,000 **feet** **Max. Elevation** 1,000 **feet**

EO Observed Area 0.57 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	BROOKS, WILLIAM J and BROOKS, NORETTA JANE, 221 PATE RD, RUTHERFORDTON, NC 28139, 828 288 4926	2012 no response
Private individual	Sybil E Walker, 130 Green Meadows Dr, Forest City, NC 28043	2012 permission granted, 2015 permission granted, 2016 reminder postcard sent
Private individual	George and Dorothy Allen, 277 PATE RD, RUTHERFORDTON, NC 28139, 828 288 2792	2012 no response

Owner Comments

Management Comments

Protection Comments

Additional Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.

Specimen

NCSU

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Wichmann **Transcription Date** 2005-06-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21401

EO Number 170 **Parent EO Number** 176

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21403

EO Number 172 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Big Horse Creek Rare Plant Site

Survey Site
Broad River: Big Horse Creek, Parris Tract (south) (sub EO of 099).
NCDOT Removal Site

Directions Broad River: Big Horse Creek, Parris tract (south). This is a Sub EO of parent EO 099 (Wichmann 2005). "east side of US 221 approximately 2000' north of the SC state line and approximately 3000' south of intersection of SR1113 and US 221; along unnamed tributary to Big Horse Creek" (Renninger 2003). Approximately 1.0 miles south of the Broad River (M. Franklin 2004). On east side of US 221 approximately 2000' north of the SC state line and approximately 3000' south of intersection of SR 1113 and US 221; along unnamed tributary to Big Horse Creek (Renninger 2003).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2012-03-12

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2012:** Wagner et al. observed 50-100 plants on 12 March 2012 (Wagner 2012). **2010:** 9 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286). **2005:** 126 clumps observed and counted in April 2005 by H W Lochner (Padgett 2007). **2004:** Copy from EO 072: B [see EO 172]:(secondary site) 9 rosettes occurring on south side of the drainage. The population covers approximately 100 SQM. 5 rosettes were flowering (M. Franklin and J. Padgett 2004). **2003:** Approximately 75-100 clumps (10 on each side of US 221) over 0.23 acres, in leaf and flower, seedling and vegetative reproduction evident (Renninger 2003).

Source Feature Identifier 68194
Source Feature Locator Big Horse Creek Rare Plant Site
Source Feature Descriptor Padgett 2012

Surveyors Heather Renninger, HW Lochner
Emily Fentress, HW Lochner
Jackie Wagner, ASU
James Padgett, NCNHP
Lance Fontaine, NCDOT
Misty Franklin, NCNHP

Survey Type Qualitative ground survey

Survey Date 2012-03-12 **First Observation Date** 2003-05-14 **Last Observation Date** 2012-03-12

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Detailed survey conducted by HW Lochner in 2003 (Wichmann 2005).

DESCRIPTION

General Description Mesic Mixed hardwood grading into Dry Mesic Oak Hickory, medium to low quality, north facing slope, junk dumped on banks, associated species: White oak, red oak, Chapinus, Christmas fern, Cornus, sourwood, dog hobble (Renninger 2003).

Min. Elevation 220 **feet** **Max. Elevation** 240 **feet**

EO Observed Area **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21403

EO Number 172 **Parent EO Number** 99

Rep Accuracy High

Separation Comments Located approximately 0.1 miles south of sub EO 076; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Parris Heartleaf Registered Heritage Area

Owner Type	Owner Name	Notes
Private individual	Private	

Owner Comments Private

Management Comments

Protection Comments RHA (Wichmann 2005).

Additional Topics 3 plants and 0.006 acres expected to be directly impacted and 42 plants and 0.077 acres expected to be indirectly impacted by this road project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005). "May be impacted by widening of US 221" (Renninger 2005).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Robinson **Version Date** 2015-11-17

Transcribed By Wichmann **Transcription Date** 2005-07-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21404
EO Number 173 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad RIver: Floyds Creek, tributary between Floyds Church and Jerusalum Church (Sub of 247).
NCDOT TIP: R-2233
NCDOT TIP: R-2824

Directions Broad River: Floyds Creek, tributary between Floyd's Church and Jerusalum Church. This is a sub EO of 247 (Wichmann 2005). "east side of US221, South of SR2125 on the terrace between two unnamed tributaries to Floyd's Creek, near trailer park" (Roeder 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-5-04
EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).
EO Data **2005:** 102 clumps were observed and counted in April 2005 by Susan Smith (HWLochner, Inc) (Smith (Padgett 2007).
2003: Less than 20 clumps and stems in leaf and flower, vegetative reproduction evident (Roeder 2003).

Source Feature Identifier 28187
Source Feature Locator Broad RIver: Floyds Creek, tributary between Floyds Church and Jerusalum Church (Sub of 247).
Source Feature Descriptor 2003-05-04; Roeder

Surveyors Ken Roeder, HW Lochner
Susan Smith, HW Lochner
Survey Type Qualitative ground survey
Survey Date 2005-04 **First Observation Date** 2003-05-04 **Last Observation Date** 2005-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Detailed survey of the area conducted by H.W. Lochner personnel in 2003 (Wichmann 2005).

DESCRIPTION

General Description Terrace above creek, Mesic Mixed hardwood with Lonicera japonica, Liriodenderon tulipifera, and Acer rubrum; actively grazed by cattle (Roeder 2005).
Min. Elevation 230 **feet** **Max. Elevation** 250 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21404

EO Number 173 **Parent EO Number** 247

Additional Topics 21 plants and 0.085 acres subject to indirect effects of the road project (Fontaine 2009). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005). "Actively grazed by cattle, NCDOT TIP R2233A may affect" (Roeder 2003).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Robinson **Version Date** 2015-11-04

Transcribed By Wichmann **Transcription Date** 2005-07-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21405

EO Number 174 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 & N of SR 2125 (sub EO of 247).
NCDOT TIP: R-2233

Directions Broad River: Floyds Creek near Harris, unnamed tributary west of US 221 and north of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). "West side of US 221, approximately 300 feet south of Floyd's Creek" (Renninger 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2003-05-03

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data 35 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286). 119 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007). 75 clumps over 0.26 acres in leaf and flower, vegetative reproduction evident (S. Smith 2003).

Source Feature Identifier 28191

Source Feature Locator Broad River: Floyds Creek near Harris, unnamed tributary west of US 221

Source Feature Descriptor 2005; Lochner and Padgett

Surveyors Susan Smith, HW Lochner
Ken Roeder, HW Lochner
James Padgett, NHP

Survey Type Quantitative ground survey

Survey Date 2010-01-27 **First Observation Date** 2003-05-03 **Last Observation Date** 2010-01-27

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mixed mesophytic forest; fairly undsiturbed habitat with Osmunda cinnomomea, Polystichum acrosticoides, Liriodendron tulipifera, and Acer rubrum (S. smith 2005).

Min. Elevation 810 **feet** **Max. Elevation** 830 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments This EO is less than 0.1 km away from EO 114, the two occurrences are separated by road and are therefore treated as sub EOs of the same principal EO; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21405

EO Number 174 **Parent EO Number** 247

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics 0.080 acre and 37 plants to be directly affected and 0.217 acre and 99 plants to be indirectly affected by this project (Fontaine 2009 - see Biological Assessemnt). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005). "Potential highway widening site" (S. Smith 2003).

DOCUMENTATION

Reference Code	Citation
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Robinson **Version Date** 2015-11-04

Transcribed By Wichmann **Transcription Date** 2005-07-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21406

EO Number 175 **Parent EO Number** 245

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Floyds Creek Tributary Rare Plant Site

Survey Site
Broad River: Floyds Creek Tributary Rare Plant Site (east) (Sub of 099).
NCDOT TIP: R-2233

Directions Broad River: Floyds Creek Tributary Rare Plant Site (east). This is a Sub EO of Parent EO 099 (Wichmann 2005). 1.5 road miles north of the Broad River on the east side of US 221(Wichmann 2005). "East of US 221; approximately 1500' south of intersection of US 221 and SR 2109; along mostly north to northwest-facing banks of an unnamed tributary to Floyd's Creek" (Renninger 2003).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2007-01-11

EO Rank Comment EO rank changed based on population size information in regards to EO Specs (Padgett 2007). EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data **2010:** 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - documentation with EO 286).
2005: When combined with sub EO 113 (located across US 221) over 1175 plants were observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 100 clumps in leaf and flower, seedling and vegetative reproduction evident (Renninger 2005).

Source Feature Identifier 39938
Source Feature Locator Broad River: Floyds Creek Tributary Rare Plant Site (east)
Source Feature Descriptor 2010; NCNHP

Surveyors Heather Renninger, HW Lochner
Emily Feultress, HW Lochner
Ken Roeder, HW Lochner
James Padgett, NHP

Survey Type Qualitative ground survey

Survey Date 2010-01-27 **First Observation Date** 2003-05-13 **Last Observation Date** 2010-01-27

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** Detailed survey conducted by HW Lochner personnel in 2005 (Wichmann 2005).

DESCRIPTION

General Description Mesic Mixed Hardwood forest grading to a Dry-mesic oak hickory of medium quality - impacted by cattle in the past, especially near stream; Associated species: Kalmia, Quercus alba, Quercus rubra, Carya sp., Fagus grandiflora, Carpinus caroliniana, Cornus florida. Also in white pine plantation upslope on west of US 221 (Renninger 2003).

Min. Elevation 220 **feet** **Max. Elevation** 240 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments Located across road (US 2211) but in the same ravine as sub EO 113; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21406

EO Number 175 **Parent EO Number** 245

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics 62 plants and 0.374 acres of this EO and EO 113 expected to be directly impacted and 123 plants and 0.744 acres expected to be indirectly impacted by this project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005).

DOCUMENTATION

Reference Code	Citation
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].

VERSION

Version Author Amoroso **Version Date** 2015-09-25

Transcribed By Wichmann **Transcription Date** 2005-08-05

This is a sub EO of principal EO 099; all sub EOs are located within 2.0 kilometers of one another and are not separated by an area of unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21642
EO Number 176

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Davenport Road/Mountain View Rare Plant Site

Survey Site
Broad River: Cleghorn Creek tributary/US 221 (parent of sub EOs: 167,168,169,&170).
USFWS Flex Fund Monitoring Site 8 including sub records 167, 170

Directions Broad River: Cleghorn Creek triburary/US 221. This is a Parent EO of 4 Sub EOs: 167, 168, 169, and 170 (Wichmann 2005). See map for details.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-05-20
EO Rank Comment EO rank is based on EO Rank Specs for this species and EO data for each sub EO, when taken together (Wichmann 2005).

EO Data **2016:** 634 plants counted by Bloom on 20 May 2016 in 0.68 acres of monitoring plots in sub EOs 167 and 170. Bloom re-delinated the entire population (including all subEOs) to a total of 7.24 acres in 2016, with an estimated 6,750 plants in the entire population (Bloom 2016).
2015: 778 plants counted on 19 May 2015 in 0.68 acres of monitoring plots in sub EOs 167, 170, and 176. Estimated 6,400 total plants covering the entire 6.84 acres (Padgett and Feldman 2015).
2014: 797 counted plants within monitoring plots on 20 May 2014 and estimated 8000 plants covering 6.84 acres of mapped area (Padgett 2014).
2013: 780 plants counted from monitoring plots totaling 0.68 acre. Estimated population size for the entire population is 7846 plants (Padgett 2013).
2012: 638 plants counted in 0.68-acre sample plot. Estimate of 6418 plants in entire population. (Padgett 2012). This is a parent EO of 4 sub EOs: 167, 168, 169, and 170. See each sub EO for detailed EO data (Wichmann 2005).

Source Feature Identifier 68210
Source Feature Locator Davenport Road/Mountain View Rare Plant Site
Source Feature Descriptor Parent EO 176

Surveyors James Padgett, NHP
Maxwell Feldman, NHP
Sean Bloom, CLC

Survey Type

Survey Date 2016-05-20 **First Observation Date** 2005-03-30 **Last Observation Date** 2016-05-20
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area 6.84 acres

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21642

EO Number 176

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent 176 is 1.6km N-NW and in watershed to StonecutterCreek; EO151 is 1.4km to the south and on a tributary to Richardson Creek (Amoroso 2015).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Wichmann **Transcription Date** 2005-08-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21645
EO Number 177

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Floyds Creek, Long Branch (Parent EO of sub EOs: 016, 107, 122, 163,164,165,& 166)
USFWS Flex Fund Monitoring Site 9 including sub records 16, 107, 163, 164, 165, 166

Directions Broad River: Floyds Creek, Long Branch. This is a parent EO of 7 sub EOs: 016, 107, 122, 163, 164, 165, and 166 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-05-11
EO Rank Comment EO rank based on EO Rank Specs for this species and all sub EOs, when taken together (Wichmann 2005).
EO Data 2016: 537 plants counted by Bloom on May 11, 2016 in monitoring plots in Sub EO 164. Bloom also re-delinated EO 164 and 163 with a revised total acreage of 5.67 acres. The extrapolated estimate of total plants in parent EO is 12,687 plants (Bloom 2016).
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EO 164. Estimated 5242 total plants covering the entire 5.21 acres (Padgett and Feldman 2015).
2014: Padgett counted 246 plants within monitoring plots on 20 May 2014 and estimated 5340 plants covering 5.21 acres of mapped area (Padgett 2014).
2013: In May 2013, Padgett and Israel counted 240 plants monitoring plots and estimated a total 2350 plants (Padgett 2013).
2012: 204 plants counted in 0.24-acre sample plot. Estimate of 1998 plants for entire population (Padgett 2012).
This is a parent EO of 7 sub EOs: 016, 107, 122, 163, 164, 165, and 166 (Wichmann 2005). See each sub EO for detailed EO data (Wichmann 2005).

Source Feature Identifier 68205
Source Feature Locator Broad River: Floyds Creek, Long Branch
Source Feature Descriptor Parent EO 177

Surveyors James Padgett, NHP
Maxwell Feldman, NHP intern
Sean Bloom, CLC

Survey Type

Survey Date 2016-05-11 **First Observation Date** 1977 **Last Observation Date** 2016-05-11
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area 2.35 acres

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21645

EO Number 177

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and area not separated by an area of persistently unsuitable habitat greater than 1.0 Kilometer wide (Wichmann 2005). See map for details. Parent 176 is 1.6km N-NW and in watershed to StonecutterCreek; EO151 is 1.4km to the south and on a tributary to Richardson Creek (Amoroso 2015).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes
F87NHP01NCUS	NCNHP Staff, 1987 Field Survey.
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.

VERSION

Version Author Robinson **Version Date** 2016-07-27

Transcribed By Wichmann **Transcription Date** 2005-08-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21676
EO Number 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, Lovelady (parent EO of 159, 160, 161, 254, 255, 256, 280-284)

Directions Mapped additional locations along Lake Rodhiss on CWMTF propery along numerous sreams and along north-facing slopes (Padgett 2016). Catawba River: Hoyle Crk-Micol Crk, Lovelady. This is a parent EO of eight Sub EOs: 159, 160, 161, 254, 255, 256, 280, 281, 282, 283, 284 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-04-07
EO Rank Comment The rank was changed from A? to A rank to reflect the additional plants found and mapped during recent surveys. Some of the additional areas surveyed on 5 April 2016 occur in planted pines with some mixed hardwoods that allow enough of a suitable habitat for the plant to persist and do reasonably well (Padgett 2016).
EO Data Aditonal areas surveyed and mapped from CWMTF application site visit (Padgett 2016). Catawba River: Hoyle Creek-Micol Creek, Lovelady. This is a parent EO of 11 Sub EOs: 160, 161, 254, 255, and 256, 281, 282, 283, 284, and 310 (Robinson 2005). See each sub EO for detailed EO data.

Source Feature Identifier 52948
Source Feature Locator Hoyle Creek-Micol Creek
Source Feature Descriptor Parent EO 178

Surveyors **Survey Type**
Survey Date 2016-04-05 **First Observation Date** 2004-Fall **Last Observation Date** 2013-05-14
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** There is a high probability of additional occurrences to be located along the Lake, numerous small streams, and north-facing slopes in suitable habitat (Padgett 2016)

DESCRIPTION

General Description Slopes and stream corridors along the south side of the lake containing north-facing slopes and suitable habitat. The forests is a mixture of planted pines, moxed hardwoods, Dry-Mesic Mixed Hardwoods, and Mesic Mixed Hardwoods. Coves in some locations contain Kalmia latifolia, Rhododenron maximun and R. minus and form marginal Acidic Cove Forest.
Min. Elevation 1,080 **feet** **Max. Elevation** 1,180 **feet**
EO Observed Area 93.00 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21676

EO Number 178

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent EO 178 is approximately 1.5 air kilometers from EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore considered independent principal EOs (Wichmann and Franklin 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments There needs to be some management decisions made concerning the planted pines to consider if they should bew cut to allow hardwoods to regenerate (Padgett 2016).

Protection Comments Some of the areas of occurrence are propsoed to be added into conservation through a CWMTF grant (application submitted and site surveyed - Padgett 2016).

Additional Topics

DOCUMENTATION

Reference Code	Citation
F13CON01NCUS	2013. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.
U09BOA01NCUS	Boaze, Pam. 2009. Monitoring report year-3: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.
U10BOA01NCUS	Boaze, Pam. 2010. Monitoring report year-4: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.
G10DOT01NCUS	Bassette, Tim. 2010. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2428. [Biological Opinion is included in the materials].
F16PAD01NCUS	Padgett, J.E. Field Survey and Field Notes from 2016.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.

VERSION

Version Author Robinson **Version Date** 2016-07-18

Transcribed By Wichmann **Transcription Date** 2005-12-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21677
EO Number 179

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (parent of 030 and 162)

Directions South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital. This is a parent EO of two sub EOs: 030 and 162. See each Sub EO for detailed directions.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2005-Spr
EO Rank Comment
EO Data This is a parent EO of sub EOs 030 and 162. See each sub EO for detailed data (Wichmann 2005).

Source Feature Identifier 28655
Source Feature Locator South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital
Source Feature Descriptor Parent EO 179

Surveyors **Survey Type**
Survey Date 2012-12-17 **First Observation Date** 1995-03-22 **Last Observation Date** 2012-12-17
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO277 is located 2.5km to the west. EO31 is located 1.6-2km to the SW and on the other side of I-40.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21677

EO Number 179

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Wichmann **Transcription Date** 2005-07-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21680

EO Number 180 **Parent EO Number** 101

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreement with Plaintiff/Requestor **Longitude** Not processed per agreement with Plaintiff/Requestor

Site Name
Camp Creek Bluff

Survey Site
Jacob Fork West (per Gaddy 1981)
South Fork Catawba River: Jacob Fork, Camp Creek Bluff (This is a sub EO of EO 101).

Directions South Fork Catawba River: Jacob Fork, Camp Creek Bluff. This is a sub EO of Parent EO 101 (Wichmann 2005). Former site B of EO 005 (Wichmann 2005). The north-facing bluff along Jacob Creek [Fork] On west side of SR 1910, About 1.2 miles north of its junction with SR 1924 [additional coordinates Not processed per agreement with Plaintiff/Requestor].

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 1981-05

EO Rank Comment EO rank is based on EO rank specs for this species (Wichmann 2005).

EO Data **1995:** About 100 plants observed by Newberry in 1995 (Newberry 1996).
1981: About 100 plants over one acre observed by Gaddy in May 1981, average seed production, few seedlings (Gaddy 1981).

Source Feature Identifier 49129
Source Feature Locator Jacob Fork West
Source Feature Descriptor 2009; NCNHP

Surveyors L.L. Gaddy
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 1995 **First Observation Date** 1981-05 **Last Observation Date** 1995

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Bluff, with mature canopy of Quercus alba, Pinus strobus, Fagus; understory of Acer rubrum; shrub layer of Kalmia and Rhododendron maximum.

Min. Elevation 1,170 **feet** **Max. Elevation** 1,190 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: This EO was formerly Site B of EO 005, it has been split out as a separate sub EO for better data organization; principal EO 101 represents both sub EO 005 and sub EO 180, in addition to sub EO 006 (Wichmann 2005).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21680

EO Number 180 **Parent EO Number** 101

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

VERSION

Version Author Amoroso **Version Date** 2015-10-14

Transcribed By Wichmann **Transcription Date** 2005-07-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21832

EO Number 181 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Dills Creek, unnamed tributary south of Kudzu Rare Plant Site (sub EO of 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions Broad River: Dills Creek, unnamed tributary south of the Kudzu Rare Plant Site on the northeast side of Dills Creek. This is a sub EO of parent EO 099 (Wichmann 2005). 1st major tributary northeast of the Broad River, north of SR 1123 (Wichmann 2005). "take SR 1122 [N], 1.2 miles to [unnamed] road on left before you get to SR 1120 (on the right), old road goes across pature to head of stream, approximately 0.3 mile (see attached map)" (Padgett 2001). 0.2 mile south of SR 1122 at the head of a stream [directions from former subpopulation 2 of EO 010].

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2001-03-27

EO Rank Comment EO rank is based on EO rank specs for this species and current EO data (Wichmann 2005).

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2012: Padgett remapped this population in the spring of 2012 as part of the USFWS Flex Fund status survey; individual plants were not counted (Padgett 2012).
2005: 500-750 estimated plants seen on May 2005 (Padgett 2005).
2001: Estimated 700 clumps plus single and double leaves present from the head of the stream to 120-150 yards downstream, plants in leaf and flower on 27 March (Padgett 2001).

Source Feature Identifier 68198
Source Feature Locator Dills Creek, east of Kudzu Farm Rare Plant Site
Source Feature Descriptor Padgett 2012

Surveyors James Padgett, NHP
James Padgett, ASU (2001)

Survey Type Qualitative ground survey

Survey Date 2012-Spring **First Observation Date** 2001-03-27 **Last Observation Date** 2012-Spring

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic hardwood community with Fagus grandifolia, Quercus alba, Polystichum acrostichoides, Sanguinaria canadensis, Lonicera japonica, Rhododendron nudiflorum, & Kalmia latifolia; ravine to steep uphill slopes and flat along stream bed; moist to dry conditions in filtered light (Padgett 2001).

Min. Elevation 220 **feet** **Max. Elevation** 250 **feet**

EO Observed Area **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21832

EO Number 181 **Parent EO Number** 99

Rep Accuracy Medium

Separation Comments This sub EO was formerly subpopulation 2 of EO 010 but has been separated into a separate sub EO since it is not within the Boundaries of the Kudzu Farm Rare Plant Site and is separated from EO 010 by a cleared field; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Partnership (legal entity)	Silver Spring LLC (V.M. Henson 2012)	2012 no response

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F12NHP01NCUS	NCNHP Staff, 2012 Field Survey
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

VERSION

Version Author Amoroso **Version Date** 2016-03-18

Transcribed By Wichmann **Transcription Date** 2005-07-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21834

EO Number 182 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hensons Creek Natural Area

Survey Site
Broad River: Hensons Creek Natural Area, large ravine down from Big Island Bridge and S of the river (Sub of 099).

Directions Broad River: Hensons Creek Natural Area, large ravine approximately 0.25 mile down-river from Big Island Bridge (SR 1106) on the south side of the Broad River and 0.25 mile east of SR 1106, in the Hensons Creek Natural Area. This is a sub EO of parent EO 099 (Wichmann 2005). James Padgett's 2001 sub-population B, see map for details.

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2001-05-13

EO Rank Comment

EO Data **2001:** 3-5,000 estimated in the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001). Subpopulation 1: About 1000 clumps estimated, plants in leaf and flower on 13 May 2001 (Padgett 2001).
1995: Size estimated in 1994 to be 200 plants; a reevaluation in 1995 by Newberry estimated size of population to be only about 100 plants (Newberry 1996).

Source Feature Identifier 28535

Source Feature Locator Broad River: Hensons Creek Natural Area sub-population B

Source Feature Descriptor 2005; Padgett

Surveyors James Padgett, ASU
Gill Newberry

Survey Type Qualitative ground survey

Survey Date 2001-05-13 **First Observation Date** 1996 **Last Observation Date** 2001-05-13

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

DESCRIPTION

General Description Rich Cove Forest and Kalmia Bluff with associated species include Quercus spp, Carya spp, Fagus grandifolia, Cornus florida, Kalmia latifolia, Rhododendron sp, Hamamelis virginiana, Leucothoe sp, Polystichum acrostichoides, Osmunda sP, Toxicodendron radicans, and Parthenocissus quinquefolia. Some areas have been logged, but the coves have been untouched (Padgett 2001).

Min. Elevation 200 **feet** **Max. Elevation** 250 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21834

EO Number 182 **Parent EO Number** 99

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-08
Transcribed By	Wichmann	**Transcription Date**	2005-11-30

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21835
EO Number 183

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Catawba

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground

Directions Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground. Ravine draining to North Fork Mountain Creek, north and east of Balls Creek Campground, approximately 0.8 miles north of the juction of SR 1006 and SR 1814, plant found along ravine about 700 meters and 1,000 meters southeast of SR 1003 (Wichmann 2005).

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2005-06-07
EO Rank Comment EO rank based on EO rank specs for this species (Wichmann 2005).
EO Data Padgett estimate 200-300 plants on 07 June 2005; some plants located in recent cut-over and proliferating as expected after recent cutting (Padgett 2005). Identification verified by J. Matthews with staff members from WNR, Inc. and Harp on 26 April 2005 (J. Roberston 2005).

Source Feature Identifier 28941
Source Feature Locator Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground
Source Feature Descriptor 2005; Padgett

Source Feature Identifier 28942
Source Feature Locator Catawba River: North Fork Mountain Creek
Source Feature Descriptor 2005; Padgett

Surveyors HARP personnel
Jim Matthews
Padgett
Wetland Natrl. Resource Consultnts (WNR) personnel

Survey Type Qualitative ground survey

Survey Date 2005-06-07 **First Observation Date** 2005-04-26 **Last Observation Date** 2005-06-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 840 **feet** **Max. Elevation** 910 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species; About 5.0 kilometers south of principal EO 096 at Murray's Mill (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas NC Division of Mitigation Services Easement

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21835

EO Number 183

Owner Type	Owner Name	Notes
Private individual	Mr. Bob MacLeod	P.O. Box 320 Denver, North Carolina 28704

Owner Comments

Management Comments Eastern-most portion of the polygon falls partially within Mitigation Services Easement.

Protection Comments Planned ski lake on site, "design team has re-planned to completely avoid all populations of the heartleaf. The land where the plant populations are located and the land surrounding the plant populations have been designated as common open space" (Roberston 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
P05ROB01NCUS	Robertson, J. 2005. Letter and maps regarding Endangered Species Biological Assesment for MacLeod Ski Lake Project in Newton, North Carolina. 8pp.
F05PAD04NCUS	Padgett, James. 2005. Natural Heritage survey of miscellaneous sites.

VERSION

Version Author Robinson **Version Date** 2015-10-15

Transcribed By Wichmann **Transcription Date** 2005-08-10

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21920

EO Number 184 **Parent EO Number** 96

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Catawba

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Murrays Mill/Upper Balls Creek Natural Area

Survey Site
Catawba River: Murrays Mill/Upper Balls Creek Natural Area (Sub EO of EO 096)
NCDOT B-2119
NCDOT TIP: R-2824

Directions Catawba River: Murrays Mill/Upper Balls Creek Natural Area. Former sub EO 022. This is a sub EO of Parent EO 096 (Wichmann 2005). Near Bridge crossing (B-2119) at Murrays Mill over Balls Creek (SR 1003). Downstream of bridge on slope along east side of stream (Savidge 1994).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2010-09-30

EO Rank Comment

EO Data **2013**: 11,860 plants counted on 29-30 October by NCDOT biologists (NCDOT 2013).
2011: 14,488 plants counted on 5-6 &12-13 December by NCDOT biologists (NCDOT 2011).
2010: Total of 13,062 plants counted by NCDOT biologists on 29 and 30 September 2010 on the Bowman tract and the "original NCDOT site" [see documentation for map] (Herman 2010).
2009: 13,062 plants counted on 29-30 September by NCDOT biologists (NCDOT 2009)
More than 9,000 plants are within construction project area (DOT TIP: B-2119); 356 plants are expected to be impacted by construction activites in 1995; however, 9,000 plants are to be protected on-site in a 25 acre area (Wells 2006).
2004: Approximately 9,000 plants counted in the late fall or early winter 2004 using line transects; this includes the Bowman Tract and Murrays Mill (Wichmann per. com. Jared Gray 2005).
1995-1996: Over 1000 plants observed by Newberry in 1995-1996. Found on both sides of the creek. Extensive population with many large plants. The density is low making estimates of size difficult (Newberry 1996).
1994: Estimated 100-1000 plants in leaf and flower on 11 May, no counts made; multiple-aged stand; widespread throughout slope; widely scattered throughout area (Savidge 1994).

Source Feature Identifier 49041
Source Feature Locator Murray's Mill Site
Source Feature Descriptor 2010-09-30; NCDOT

Source Feature Identifier 90106
Source Feature Locator Murray's Mill Site
Source Feature Descriptor 2011; NCDOT

Source Feature Identifier 90107
Source Feature Locator Murray's Mill Site
Source Feature Descriptor 2013; NCDOT

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21920

EO Number 184 **Parent EO Number** 96

Surveyors NC DOT Personnel
Tim Savidge, NC DOT
Gill Newberry
Dennis Herman, NCDOT
Tim Bassette, NCDOT
Anne Burroughs, NCDOT
Jared Gray, NCDOT
Matt Haney, NCDOT
Kathy Herring, NCDOT
Steve Mitchell, NCDOT, NEU BSG

Survey Type Qualitative ground survey

Survey Date 2013-10-30 **First Observation Date** 1994-05-11 **Last Observation Date** 2013-10-30

Data Sensitive Element N **Comments**

Monitoring Needs Comments Inventory and monitoring will occur every two years for a total of three monitoring sessions (Herman 2010).

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic Oak-Hickory Forest on slope grading into Balls Creek; relatively undisturbed; moist, mid to lower slope, filtered light/shaded with Goodyera pubescens, Kalmia latifolia, and Chimaphila maculata (Savidge 1994).

Min. Elevation 850 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 6.00 **acres**

Rep Accuracy Medium

Separation Comments Located within 2.0 kilometers of sub EOs 038 and 039 and not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: The overall threat from invasive species is low on both Tract 1 and 2. The following invasive species were found throughout Murray's Mill Conservation Area: Elaeagnus umbellata, Ligustrum sinense, Lonicera japonica, Albizia julibrissin, Rosa multiflora (NCDOT 2013).

OWNERSHIP

Managed Areas Murrays Mill Conservation Site
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NC DOT	
Private individual		

Owner Comments

Management Comments A conservation/managment plan has been developed (Herman 2010).

Protection Comments NCDOT purchased 24.74 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Murrays Mill and Bowman Tract (contiguous) are "going through purchase" by NC DOT - property boundaries will be sent to NHP after survey (Wichmann per. com. with Jared Gray on 6 December 2005). Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005). Land purchased by NC DOT around Murrays Mill to be turned over to the Catawba County Historic Preservation Society (1994).

Additional Topics EO is associated with NC DOT project B-2119. Part of Parent EO 096 having 37,800 plants prior to NCDOT impacts of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005). Will be impacted by Bridge replacement (DOT 1994). This bridge project was subject to consultation with USFWS (ASNC log no. 4-2-95-102). The 1995 Biological Opinion (of non-jeopardy) issued by the Service was contingent upon purchase of approximately 29 acres at Murrays Mill for perpetual protection of the species. As of early 2006, NCDOT is working to acquire an additional parcel (the Bowman Tract) which will bring the total to approximately 34 acres in protective ownership (D. Herman, NCDOT, personal communication with C.Wells, USFWS, 8/2006) [C.Wells, 8/2006].

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 21920

EO Number 184 **Parent EO Number** 96

DOCUMENTATION

Reference Code	Citation
F94CON01NCUS	Contributed. 1994. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U04DOT01NCUS	NC Department of Transportation and Catawba Coutny Historical Association. 2004. Draft Conservation Plant for Murrays Mill Conservation Area, Catawba County, NC. 2pp.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F01DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff in 2001.
F10CON02NCUS	2010. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.

Specimen

Dr. Newberry of USC-Spartanburg, T. Savidge, 11 May 1994

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Wichmann **Transcription Date** 2005-08-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22194

EO Number 187 **Parent EO Number** 307

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Beaverdam Creek: Ravine just east of SR 1319, BYP sites 37 and 38
NCDOT TIP: R-2707

Directions First Broad River: Beaverdam Creek: Ravine just east of SR 1319, Proposed Shelby Bypass Sites 37 and 38 (Wichmann 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2001-04-11

EO Rank Comment

EO Data Bassett, Gray, and Haney counted 264 plants over 0.47 acres, in two groups (sites) on 11 April 2001 (Basette 2003).

Source Feature Identifier 29590

Source Feature Locator First Broad River: Beaverdam Creek: Ravine just east of SR 1319, BYP sites 37 and 38

Source Feature Descriptor 2001; Bassett et al.

Surveyors Jared Gray, NC DOT
Matt Haney, NC DOT
Tim Bassette, NC DOT

Survey Type Quantitative ground survey

Survey Date 2001-04-11 **First Observation Date** 1998-2001 **Last Observation Date** 2001-04-11

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Suitable habitat between this EO and EO 188 should be searched for additional occurrences, discovery could create a sub-principal relationship (Wichmann 2005).

DESCRIPTION

General Description Site 37 [EO 187, inpart]: Invasive species in site, moderate canopy, debris pile and dirt road located in site; Site 38 [EO 187, in part]: moderate canopy, dense understory with invasive species (Bassette 2003).

Min. Elevation 790 **feet** **Max. Elevation** 850 **feet**

EO Observed Area 0.47 **acres**

Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Management Comments

Protection Comments

Additional Topics EO will not have any indirect or cumulative effects associated with the proposed Shelby Bypass (Bassette 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22194

EO Number 187 **Parent EO Number** 307

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.

VERSION

Version Author	Wichmann	**Version Date**	2005-10-04
Transcribed By	Wichmann	**Transcription Date**	2005-10-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22195
EO Number 188 **Parent EO Number** 307

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Beaverdam Creek, Tributary N of SR 1316 and W of SR 1315 (Plato Lee Road), BYP sites 1,2,&3
NCDOT TIP: R-2707

Directions First Broad River, Beaverdam Creek, Tributary north of SR 1316 and west of SR 1315 (Plato Lee Road), Proposed Shelby Bypass Sites 1, 2, and 3 (Wichmann 2005).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2000-10-26
EO Rank Comment
EO Data 327 individuals in 3 groups (sites) over 0.763 ac (Bassette 2003, NCDOT 2008)

Source Feature Identifier 29632
Source Feature Locator First Broad River, Beaverdam Creek, Tributary north of SR 1316 and west of SR 1315 (Plato Lee Road), Proposed Shelb
Source Feature Descriptor 1998, NCDOT

Source Feature Identifier 29633
Source Feature Locator First Broad River, Beaverdam Creek, Tributary north of SR 1316 and west of SR 1315 (Plato Lee Road), Proposed Shelb
Source Feature Descriptor 1998, NCDOT

Source Feature Identifier 29634
Source Feature Locator First Broad River, Beaverdam Creek, Tributary north of SR 1316 and west of SR 1315 (Plato Lee Road), Proposed Shelb
Source Feature Descriptor 1998, NCDOT

Surveyors Jennifer Harrison, NC DOT
Tim Bassette, NC DOT

Survey Type Quantitative ground survey

Survey Date 2000-10-26 **First Observation Date** 1998-2000 **Last Observation Date** 2000-10-26
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Suitable habitat between this EO and EO 187 should be searched for additional occurrences, discovery could create a sub-principal relationship (Wichmann 2005).

DESCRIPTION

General Description Site 3 [EO 188, in part] is a cow pasture and highly eroded stream banks, Hexastylis plants are highly trampled, cow waste common (Bassette 2003).
Min. Elevation 790 **feet** **Max. Elevation** 850 **feet**
EO Observed Area 0.76 **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22195

EO Number 188 **Parent EO Number** 307

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Cow trampling and waste common (Bassette 2003).

Additional Topics Neither indirect nor cumulative effects from the proposed Shelby Bypass are predicted (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].

VERSION

Version Author Mason **Version Date** 2009-01-30

Transcribed By Wichmann **Transcription Date** 2005-10-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22196

EO Number 189 **Parent EO Number** 307

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Beaverdam Creek, ravine to unnamed tributary S of SR 1314 & W of SR 1313, BYP site 39
NCDOT TIP: R-2824
NCDOT TIP: R-2707

Directions First Broad River: Beaverdam Creek. Ravine to unnamed tributary located south of SR 1314 and west of SR 1313, Proposed Shelby Bypass Site 39 (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2006-04-06

EO Rank Comment

EO Data 1 clump found by NCDOT biologists at site 39 on 06 April 2006 (Bassette 2009). 3 clumps over 0.003 acres observed by NCDOT biologists on 10 April 2001 (Bassette 2003).

Source Feature Identifier 29592

Source Feature Locator First Broad River: Beaverdam Creek. Ravine to unnamed tributary located south of SR 1314 and west of SR 1313, Propc

Source Feature Descriptor 2000; Bassett

Surveyors Tim Bassette, NC DOT **Survey Type** Qualitative ground survey

Survey Date 2006-04-06 **First Observation Date** 2000 **Last Observation Date** 2006-04-06

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** Suitable habitat between this EO and EO 036 should be searched for additional occurrences.

DESCRIPTION

General Description Poor, stressed site, thick canopy with little herbaceous vegetation...this area also lies with Shelby's 1313/Norfolk Southern-CSX tail line industrial center. The City of Shelby projects that land use around site 39 [EO 189] will change from undeveloped to industrial development (Bassette 2003).

Min. Elevation 850 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 0.00 **acres**

Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Management Comments

Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22196

EO Number 189 **Parent EO Number** 307

Additional Topics Indirect effects related to proposed Shelby Bypass expected due to projected industrial development of land (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2015-10-14

Transcribed By BLW **Transcription Date** 2005-09-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22197

EO Number 190 **Parent EO Number** 217

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Brushy Creek,Tributary just north of CSX rail line, BYP Site 4 (Sub EO of EO 217).
NCDOT TIP: R-2824
NCDOT TIP: R-2707

Directions Broad River: Brushy Creek, tributary just north of CSX rail line. This is a sub EO of Parent EO 217 (Wichmann 2005).

SURVEY INFORMATION

EO Rank F - Failed to find **EO Rank Date** 2006-04-06

EO Rank Comment

EO Data No plants located during surveys by NCDOT biologists on 07 April 2006 (Bassette 2009). 3 clumps (Bassette et al. 2000).

Source Feature Identifier 29594

Source Feature Locator Broad River: Brushy Creek, tributary just north of CSX rail line.

Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Homes, NC Dept. of Transportation

Survey Type Quantitative ground survey

Survey Date 2006-04-07 **First Observation Date** 2000-10-27 **Last Observation Date** 2000-10-27

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Low quality site, cutover area (including along stream bank), overgrown with blackberry and invasive Japanese honeysuckle; narrow (400 ft wide) strip of land between the footprint of the proposed US 74 Bypass and the CSX rail line (Bassette 2003).

Min. Elevation 800 **feet** **Max. Elevation** 830 **feet**

EO Observed Area 0.00 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22197

EO Number 190 **Parent EO Number** 217

Owner Comments

Management Comments

Protection Comments

Additional Topics "Site 4 [EO 190] sits within industrial land use zones. Neither indirect effects due to induced development nor cumulative effects are predicted for this site because it is situated in a narrow (400 ft wide) strip of land between the footprint of the proposed US 74 Bypass and CSX rail line. Access into this piece of land will be limited due to the proposed Bypass and existing rail line. However, because this site is situated within 400 ft of the mechanized clearing line, under worst case scenario this entire site may have indirect effects due to competition from invasive species" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-02

Transcribed By Wichmann **Transcription Date** 2005-09-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22198

EO Number 191 **Parent EO Number** 217

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Brushy Creek, Tributary north of SR 1308, BYP Sites 5,6,&7 (Sub EO of EO 217)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Broad River: Brushy Creek, tributary north of SR 1308, Shelby Bypass Sites 5, 6, and 7. This is a Sub EO of Principal EO 217 (Wichmann 2005). Located north of SR 1314 [SR 1308] and the CSX railroad tracks in a clear cut areas; Lat./Long.: Site 6: 35 18 51/ 81 32 49; Site 7: 35 18 54/ 81 35 23 (Bassette 2003).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2000-10-27

EO Rank Comment EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Data 2014:NCDOT biologists observed plants (no specific population data given) (NCDOT 2015).
2013: The number of plants totaled 283 within the entire site prior to project construction. Of this total, the portion of the site west of the stream contains 193 plants, while the remaining 90 plants are found on the part of the site east of the stream. (Bassette 2015).
2000: Approximately 157 clumps over 0.4 acres counted by Bassette et al. on 27 October 2000 (Bassette 2003).

Source Feature Identifier 29595

Source Feature Locator Brushy Creek, tributary north of SR 1308, Shelby Bypass Sites 5, 6, and 7.

Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Mike Sanderson, NC Dept. of Transportation
Jennifer Morris, NC Dept. of Transportation

Survey Type Qualitative ground survey

Survey Date 2013-06-03 **First Observation Date** 1998-2000 **Last Observation Date** 2014

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Unnamed intermittent tributary to Brushy Creek, in clear-cut areas ovegrown with Japanese honeysuckle; low quality site (Bassette 2003).

Min. Elevation 770 **feet** **Max. Elevation** 820 **feet**

EO Observed Area 0.40 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22198

EO Number 191 **Parent EO Number** 217

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NC Department of Transportation	

Owner Comments

Management Comments As part of its conservation measures to offset the loss of Hexastylis naniflora plants in occupied habitat along TIP No. R-2707 (US 74 Shelby Bypass), the NC Department of Transportation acquired right-of-way to preserve in perpetuity H. naniflora specimens at Site 7 that will remain intact after incurring adverse direct and/or indirect (drainage) effects associated with construction of the Bypass project. This right-of-way that is protected in perpetuity also contains a protective buffer around the limits of the preserved occupied habitat of H. naniflora in order to minimize the potential adverse effects that may otherwise harm the protected site in the future.

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Additional Topics "Site 5: Indirect effects from invasive species, under a worst-case scenario, may impact this site in its entirety. However, whatever portion of this site is not ultimately impacted by indirects effects fall under cumulative effects as a result of the Wal-Mart facility proposed just east of the site south of the proposed Shelby Bypass" (Bassette 2003). Sites 6 and 7:...All 0.0001 ac of Site 6 fall under the projects; construction limits, resulting in a loss of five DFHL plants. Road construction activities will also impact 0.03 ac and 11 DFHL plants at the 0.4 ac Site 7" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT01NCUS	Haney, Matt. 2015. 2013 Hexastylis naniflora (Dwarf-Flowered Heartleaf) Portion of Element Occurrence No. 191: Site 7 Inventory and Monitoring Report US 74 Shelby Bypass (TIP R-2707) Cleveland County, North Carolina. NCDOT, Raleigh, NC.
F15DOT03NCUS	N.C. Department of Transportation Division 10. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory

VERSION

Version Author Amoroso **Version Date** 2016-04-14

Transcribed By Wichmann **Transcription Date** 2005-09-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22199

EO Number 192 **Parent EO Number** 217

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Brushy Creek, Shelby Bypass Sites 8, 8A, 8B (Sub EO of EO 217)
NCDOT TIP: R-2707

Directions Broad River: Brushy Creek, Ridge south of Creek, Proposed Shelby Bypass Sites 8, 8A, and 8B. This is a sub EO of Parent EO 217.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2016-10-27

EO Rank Comment Rank specs followed: 200-500 clumps occurring on land impacted by human disturbance.

EO Data **2016:** 58 small vegetative rosettes and individual stems over 0.1 acre counted at Site 8B on 27 October 2016 by Bain et al.; this was a post construction survey where the entire population was surveyed (NCDOT 2016). **2015:** 434 plants total counted at Sites 8 and 8A on 15 December by Bain and Stafford: 317 vegetative rosettes and invidual stems over 0.4 acres at Site 8; 117 vegetative rosettes and invidual stems over 0.26 acres at Site 8A; this was a post construction survey where the entire population locations were surveyed; the area that is Site 8B was surveyed but no plants were noted at this time, likely due to dense leaf litter following leaf off conditions (NCDOT 2016). **2000:** 311 clumps over 0.54 acres counted by Bassette et al. on 27 October 2000 at Site 8; this was a pre-construction survey and Sites 8A and 8B were not known at this time (Bassette 2003, NCDOT 2016).

Source Feature Identifier 29596
Source Feature Locator Brushy Creek: Shelby Bypass Site 8
Source Feature Descriptor 2015-12-15; NCDOT (2016); 319 plants over 0.4 acres in NCDOT ROW

Source Feature Identifier 107219
Source Feature Locator Brushy Creek: Shelby Bypass Site 8A
Source Feature Descriptor 2015-12-15; NCDOT (2016); 117 plants over 0.26 acres in NCDOT ROW

Source Feature Identifier 107220
Source Feature Locator Brushy Creek: Shelby Bypass Site 8B
Source Feature Descriptor 2016-10-27; NCDOT (2016); 58 plants over 0.1 acres in NCDOT ROW

Surveyors Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Hal Bain, RK&K Consulting Engineers
Pete Stafford, RK&K Consulting Engineers
Tim Bassette, NC Dept. of Transportation

Survey Type Quantitative ground survey

Survey Date 2016-10-27 **First Observation Date** 1998-2000 **Last Observation Date** 2016-10-27

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Sites 8, 8A, 8B: stream bank, stream floodplain, to mid slope. Historically disturbed area (logged over 70 years in the

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22199

EO Number 192 **Parent EO Number** 217

past). Habitat composed of a medium/high quality Dry-Mesic Oak- Hickory Forest grading to a medium/high quality Mesic Mixed Hardwood Forest (Piedmont Subtype) grading to a narrow medium/high quality Piedmont Bottomland Hardwood Forest. Soils mapped as ToA, defined as Toccoa loam with 0-2% slopes, occasionally flooded. Associated species: Athyrium asplenioides, Asplenium platyneuron, Acer rubrum, Cornus florida, Carya tomentosa, Carpinus caroliniana, Carya ovata, Chimaphila maculate, Dioscorea villosa, Fagus grandifolia, Ilex opaca, Halesia carolina, Smilax rotundifolia, Oxydendrum arboreum, Rubus argutus, Polystichum acrostichoides, Nyssa sylvatica, Viola sp., Quercus alba, Quercus falcatta, Quercus rubra, Prunus serotina, Liriodendron tulipifera, Liquidambar styraciflua, Vitis rotundifolia, and Toxicodendron radicans (Bain in NCDOT 2016).Site 8: High quality site, no invasive species (Bassette 2003).

Min. Elevation 750 **feet** **Max. Elevation** 810 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes

Owner Comments

Management Comments Management needs and opportunities include eliminating existing exotic, invasive plant species in and around the site (ROW associated with the Shelby Bypass) and managing the growth and spread of such species in the future. The vine, shrub, and understory vegetative layers may need to be maintained in an open state to reduce the risk that other plant species will outcompete with Hexastylis naniflora plants (Bain in NCDOT 2016).

Protection Comments "NCDOT proposes to protect Site 8 [EO 192] through a conservation easement" (Bassette 2003).

Additional Topics As part of its conservation measures to offset the loss of Hexastylis naniflora plants in occupied habitat along TIP No. R-2707 (US 74 Shelby Bypass), the NC Department of Transportation acquired right-of-way to preserve in perpetuity H. naniflora specimens at Site 8 that will remain intact after construction of the Bypass project. This right-of-way that is protected in perpetuity also contains a protective buffer around the limits of the preserved occupied habitat of H. naniflora in order to minimize the potential adverse effects that may otherwise harm the protected site in the future (Bain in NCDOT 2016). "NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. However, if it is not possible to obtain a conservarion easement, development as a result of the interchange is assumed to impact this site. The entire site falls under an indirect effect because of its close proximity to the proposed Shelby Bypass interchage with NC 226 (Polkville Road)" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G16DOT02NCUS	N.C. Department of Transportation. 2016. Hexastylis naniflora (Dwarf-flowered Heartleaf). Portion of Element Occurrence No. 192. Inventory and Monitoring Report. US 74 Shelby Bypass (TIP R-2707). Cleveland County. November 09, 2016.

VERSION

Version Author Mason **Version Date** 2017-11-14

Transcribed By Wichmann **Transcription Date** 2005-10-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22200
EO Number 193 **Parent EO Number** 217

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Brushy Creek, Ridge southwest of creek, near NC 226, BYP site 9 (Sub EO of 217)
NCDOT TIP: R-2707

Directions Broad River: Brushy Creek, Ridge southwest of creek near NC 226, Proposed Shelby Bypass Site 9 This is a sub EO of principal EO 217 (Wichmann 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2000-10
EO Rank Comment
EO Data 271 plant seen over 0.3 acres by Bassette et al, October 2000 (Bassette 2003).

Source Feature Identifier 29597
Source Feature Locator Brushy Creek, Ridge southwest of creek near NC 226, Proposed Shelby Bypass Site 9
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
NC DOT personnel

Survey Type Quantitative ground survey

Survey Date 2000-10 **First Observation Date** 1998-2000 **Last Observation Date** 2000-10
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 750 **feet** **Max. Elevation** 810 **feet**
EO Observed Area 0.30 **acres**
Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22200

EO Number 193 **Parent EO Number** 217

Additional Topics "NC DOT proposes to protect Site 9 through a conservation easement. However, if it is not possible to obtain a conservation easement, development as a result of the interchange is assumed to imact this site. The entire site falls under and indirect effect because of its close proximity to the proposed Shelby Bypass interchange with NC 226 (Polkville Road)" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-02

Transcribed By Wichmann **Transcription Date** 2005-10-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22201
EO Number 194 **Parent EO Number** 211

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: unnamed tributary, Shelby Bypass Sites 10, 11, & 12
(Sub EO of EO 211)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions First Broad River: unnamed tributary, Shelby Bypass sites 10, 11, and 12. This is a sub EO of Parent EO 211 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2000-11-01
EO Rank Comment
EO Data **2014**: NCDOT biologists observed plants (no count given) (NCDOT 2015)
2000: 1,965 clumps over 3.0 acres (Bassette et al. 2000).

Source Feature Identifier 29598
Source Feature Locator First Broad River: unnamed tributary, Shelby Bypass sites 10, 11, and 12
Source Feature Descriptor 2001; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Mary Fraser, NC Dept. of Transportation
Shannon Simpson, NC Dept. of Transportation

Survey Type Quantitative ground survey

Survey Date 2000-11-01 **First Observation Date** 2000-10-30 **Last Observation Date** 2000-11-01
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description High quality site, no invasive species; along the stream banks of an unnamed perennial tributary to First Broad River, in hardwood forest between the residential/farming areas (Bassette et al. 2000).
Min. Elevation 780 **feet** **Max. Elevation** 810 **feet**
EO Observed Area 0.60 **acres**
Rep Accuracy Medium **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22201

EO Number 194 **Parent EO Number** 211

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009). "NCDOT proposes to obtain a conservation easment to protect Site 12 [EO 194]" (Bassette et al. 2003).

Additional Topics "The City of Shelby's existing land use plan dipicts this site as part of an undeveloped tract of land. The city's land development plan calls for commercial development at Site 12 [EO 194]. Consequently, the remaining portion of Site 12 [EO 194] will have cumulative impacts associated with the proposed Shelby Bypass. Shelby's future planned growth is assumed to cumulatively impact the rest of Site 12 [EO 194] not already impacted by indirect impacts. However, NCDOT proposes to obtain a conservation easement to protect Site 12 [EO 194]. Also note that portions of Site 10 [EO 194] and Site 11 [EO 194] not impacted by direct construction activities are presumed to be protected by interrelated and interdependent on-site conservation actions" (Bassette 2003). "...Road construction activities will impact 55 DFHL plants and 0.09 ac of the 365 DFHL plants found at the 0.6 ac Site 10. Site 11 will lose 3 plants and 0.01 ac from direct contruction activities" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
F15DOT03NCUS	N.C. Department of Transportation Division 10. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory

VERSION

Version Author Robinson **Version Date** 2016-03-23

Transcribed By Wichmann **Transcription Date** 2005-09-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22202
EO Number 195

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Hickory Creek, unnamed tributary SE of HWY 18
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions First Broad River: Hickory Creek, unnamed tributary southeast of highway 18; NC DOT Proposed Shelby Bypass Site 040 (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2006-04-06
EO Rank Comment
EO Data 22 plants counted by NCDOT biologists on 06 April 2006 (Bassette 2009). 14 clumps over 0.015 ac observed by NCDOT biologists on 10 April 2001 (Bassette 2003).

Source Feature Identifier 29599
Source Feature Locator First Broad River: Hickory Creek, unnamed tributary southeast of highway 18; DOT site 40
Source Feature Descriptor 2001-04-10; NCDOT

Surveyors Tim Bassette, NC DOT
Jared Gray, NC DOT
Matt Haney, NC DOT

Survey Type Quantitative ground survey

Survey Date 2006-04-06 **First Observation Date** 2001-04-10 **Last Observation Date** 2006-04-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Relatively open canopy, and open understory, in a side yard of residential area (Bassette 2003).
Min. Elevation 280 **feet** **Max. Elevation** 320 **feet**
EO Observed Area 0.02 **acres**
Rep Accuracy High **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics "Site 40 [EO 195] will not have indirect of cumulative effects associated with the proposed Shelby Bypass (Bassette 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22202

EO Number 195

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2015-12-11

Transcribed By Wichmann **Transcription Date** 2005-10-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22203

EO Number 196 **Parent EO Number** 216

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Friendship Chapel and tributary to Catawba River (Sub of 216)
NCDOT TIP: R-2707

Directions Buffalo Creek: Friendship Chapel and unnamed tributary to Buffalo Creek, located south-west of Friendship Chapel and south of SR 1926; NC DOT Proposed Shelby Bypass Sites 41 and 42. This is a sub EO of Parent EO 216 (Wichmann 2005). "Hwy 150 to Airport Road. Go N/NW on Airport Road to the railroad track. Walk west on the tracks about 200 yards and then head right to the stream, [plants] located on the west bank of the stream" (Lespinasse 2004).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2006-04-29

EO Rank Comment

EO Data **2006:** 56 plants counted by NCDOT biologists on 29 April 2006 (Bassette 2009).
2004: Undetermined number of clumps observed during stream determination, October 2004 (Lespinasse 2004).[not same location as NCDOT]
2001: 55 clumps over 0.114 ac observed by NCDOT biologists on 09 April 2001 (Bassette 2003).

Source Feature Identifier 29600
Source Feature Locator Sites 41 and 42, unnamed, intermittent tributary to Buffalo Creek near railroad track.
Source Feature Descriptor 2004; NCDOT

Surveyors Polly Lespinasse, NC DWQ
Alan Johnson, NC DWQ
Tim Bassette, NC DOT
Jared Gray, NC DOT
Matt Haney, NC DOT

Survey Type Quantitative ground survey

Survey Date 2006-04-29 **First Observation Date** 1998-2000 **Last Observation Date** 2006-04-29

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry woodlands with nearly closed canopy at mid slope (Lespinasse 2004). Site 41 [EO 196, in part]: somewhat open canopy, with moderate understory; Site 42 [EO 196, in part]: stressed, poor site with dense herbaceouse growth and moderate canopy (Bassette 2003).

Min. Elevation 820 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 0.11 **acres**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22203

EO Number 196 **Parent EO Number** 216

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. See map for details. Separated from sub EO 197 of Parent EO 216 by more then 2.0 kilometers when measured along suitable habitat (Wichmann 2005).

General Comments: The location described by Lespinasse in 2004 does not appear to be the same as the location reported by NCDOT. Based on her vague directions and Topozone map location, it was in the small draw to the east as seen in the USGS topo map (Amoroso 2015).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments "A portion of the site is owned by CSX and is used for coal transfer to power plants" (Lespinasse 2004).

Management Comments

Protection Comments

Additional Topics Sites 41 and 42 [EO 196] will not have indirect or cumulative effects associated with the proposed Shelby Bypass (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
F04CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22204
EO Number 197 **Parent EO Number** 216

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Kings Mountain Reservoir, tributary N of SR 2068, BYP Site 13 (Sub EO of 216).
NCDOT TIP: R-2707

Directions Buffalo Creek: Kings Mountain Reservoir, tributary north of SR 2068. NC DOT proposed Shelby Bypass Site 13. This is a sub EO of Parent EO 216 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2000-11-01
EO Rank Comment
EO Data 2,067 clumps (Bassette et al. 2000).

Source Feature Identifier 29601
Source Feature Locator Buffalo Creek: Kings Mountain Reservoir, tributary north of SR 2068. NC DOT Site 13
Source Feature Descriptor 2000-11; Bassette et al, NC DOT)

Surveyors Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation personnel
Survey Type Quantitative ground survey

Survey Date 2000-11-01 **First Observation Date** 1998-2000 **Last Observation Date** 2000-11-01
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description "High quality site" (Bassette 2003).
Min. Elevation 790 **feet** **Max. Elevation** 840 **feet**
EO Observed Area 2.78 **acres**
Rep Accuracy High
Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments NC DOT plans "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement; if not; presumed to fall entirely under indirect effects of the proposed Shelby Bypass" (Bassette et al. 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22204

EO Number 197 **Parent EO Number** 216

Additional Topics "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement. However, if it is not possible to obtain a conservation easement, development as a result of the interchange is assumed to impact the site. Because Site 13 [EO 197] sits within approximately 1,200 ft from the proposed Shelby Bypass's interchange with NC 180 and NC 150 (Cherryville Road), this site is presumed to fall entirely under indirect effects" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].

VERSION

Version Author Amoroso **Version Date** 2015-09-23

Transcribed By Wichmann **Transcription Date** 2005-09-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22205
EO Number 198 **Parent EO Number** 216

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Kings Mountain Reservoir, tributary S of SR 2086; BYP Site 14 (Sub of 216)
NCDOT TIP: R-2707

Directions Buffalo Creek: Kings Mountain Reservoir, tributary south of SR 2068; NCDOT proposed Shelby Bypass Site 14. This is a sub EO of Parent EO 216 (Wichmann 2005).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2007-04-10
EO Rank Comment
EO Data 450 plants counted by NCDOT biologists on 10 April 2007 (Bassette 2009). Total of 177 clumps: 87 clumps over 0.1 acres within project corridor and 90 plants in area adjoining site but outside of project corridor in 2000 (Bassette et. al 2000, NCDOT 2008).

Source Feature Identifier 29602
Source Feature Locator Shelby Bypass site 14
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
Dept. of Transportation Personnel
Survey Type Quantitative ground survey
Survey Date 2007-04-10 **First Observation Date** 1998-2000 **Last Observation Date** 2007-04-10
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 790 **feet** **Max. Elevation** 810 **feet**
EO Observed Area 0.10 **acres**
Rep Accuracy High **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22205

EO Number 198 **Parent EO Number** 216

Additional Topics "According to the City of Shelby's existing land use plan, Site 12 sits in an undeveloped tract of land. The City's land development plant proposes low-density residential development on this land parcel. Consequently, private development resulting in the loss of Site 23 would be considered a cumulative effect" (Bassette et. al 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-09-23

Transcribed By Wichmann **Transcription Date** 2005-09-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22206

EO Number 199 **Parent EO Number** 216

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Kings Mountain Reservoir: tributary E of US 180, BYP Sites 15-19 (Sub of 216).
NCDOT TIP: R-2707

Directions Buffalo Creek: Kings Mountain Reservoir, tributary east of US 180, Proposed Shelby Bypass Sites 15, 16, 17, 18, and 19. This is a sub EO of Parent EO 216 (Wichmann 2005). "Located east of NC 180 and north of SR 2067 (Fairview Road), Site 15 [EO 199, in part] is found along the stream banks of an unnamed intermittent tributary to Kings Mountain Reservoir" (Bassette 2003). "Sites 16, 17, and 18: Located east of NC 180, north of SR 2067 (Fairview Road), and south of DFHL Site 15, 16, 17, and 18 are found near each other in a heavily wooded area. None of the three sites is associated with or located near a stream (Bassette 2003).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2007-04

EO Rank Comment

EO Data 432 plants total at all five sites counted by NCDOT biologists in April and May of 2006 and April 2007 (Bassetted 2009). Total of 409 plants: 408 clumps over 0.3 acres in 4 groups and one plant several feet outside of flagged area where the other groups occur in 2000 (Bassette et al. 2003, NCDOT 2008).

Source Feature Identifier 29603
Source Feature Locator Shleby Bypass NCDOT Site 14
Source Feature Descriptor 2000; NCDOT

Source Feature Identifier 29605
Source Feature Locator Shelby Bypass site 16
Source Feature Descriptor 2000; NCDOT

Source Feature Identifier 29606
Source Feature Locator Shelby Bypass sites 17 and 18
Source Feature Descriptor 2000; NCDOT

Source Feature Identifier 29607
Source Feature Locator Shelby Bypass site 19
Source Feature Descriptor 2000; NCDOT

Surveyors Jared Gray, NC Dept. of Transportation
Tim Bassette, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation

Survey Type Quantitative ground survey

Survey Date 2007-04 **First Observation Date** 1998-2000 **Last Observation Date** 2007-04

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description "Site 15 is found along the stream banks of an unnamed intermittent tributary to Kings Mountian Reservoir. Despite

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22206

EO Number 199 **Parent EO Number** 216

running pine (Lycopodium flabelliforme) and poison ivy as a prodominane ground cover, the quality of this site, relative to other DFHL sites on the project, is good" (Bassette 2003). "Sites 16, 17, and 18 are found near each other in a heavily wooded area. None of the three sites is associated with or located near a stream" (Bassette 2003).

Min. Elevation 790 **feet** **Max. Elevation** 810 **feet**

EO Observed Area 0.30 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009). Expected to be impacted by the Proposed Shelby Bypass (Wichmann 2005).

Additional Topics "Site 15:...Approximately 67 DFHL plant and 0.4 ac of the 0.2 ac site fall under project's construction limits" (Bassette et. al 2003). "Sites 16, 17, and 18:...Site 16, which contains 13 DFHL plants over 0.053 ac, includes 0.03 ac of construction impacts to DFHL plants. Construction activities will eliminate all Sites 17 and 18, resulting in a loss of 4 plants over 0.001ac Site 17 and 54 plants over 0.049 ac at Site 18. Despite its size, Site 18 is a high quality site relative to other DFHL sites on the project" (Bassette et. al 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2016-08-22

Transcribed By Wichmann **Transcription Date** 2005-09-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22208

EO Number 200 **Parent EO Number** 216

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Kings Mountain Reservoir, Tributary N of SR 2033,
BYP Sites 20 &21 (Sub EO of 216)
NCDOT TIP: R-2707

Directions Buffalo Creek: Kings Mountain Reservoir, tributary north of SR 2033, NC DOT proposed Shelby Bypass Sites 20 &21. This is a Sub EO of Parent EO 216 (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2000-04-10

EO Rank Comment EO Rank based on EO Rank Specs for this species and most recent EO data (Wichmann 2005).

EO Data Total of 55 plants on 10 April 2000: 35 clumps over in two groups over 0.12 acres plus 20 plants in unflagged, cleared area halfway between the two groups (Bassette et. al 2000, NCDOT 2008).

Source Feature Identifier 29608

Source Feature Locator Shelby Bypass sites 20 and 21

Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
Jennifer Harrison, NC Dept. of Transportation

Survey Type Quantitative ground survey

Survey Date 2000-04-10 **First Observation Date** 2000-04-10 **Last Observation Date** 2000-04-10

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Stream banks of an intermittent tributary to Kings Mountain Reservior; partially to completely cleared of hardwood trees; partially covered by downed vegetation from clearing activities (Bassette 2003).

Min. Elevation 850 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 0.12 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22208

EO Number 200 **Parent EO Number** 216

Additional Topics "Of Site 20's [EO 200, in part] 16 DFHL plants over 0.12 ac, 0.004 ac fall within the construction limits. Construction will eliminate all DFHL plants over 0.022 ac of Site 21" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-09-23

Transcribed By Wichmann **Transcription Date** 2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22210
EO Number 201 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Tributary S of SR 2047, BYP Sites 26 & 27 (Sub EO of EO 214)
NCDOT TIP: R-2707

Directions Buffalo Creek: Tributary south of SR 2047, Shelby Bypass sites 26 and 27. This is a sub EO of Parent EO 214 (Wichmann 2005). "Site 27 [EO 201, in part] sits south of both SR 2047 (Borders Road) and site 25 [EO 213]. An unnamed intermittent tributary to Buffalo Creek adjoins the site" (Bassette 2003).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2000-10-25
EO Rank Comment
EO Data **2000:** Total of 78 plants in two groups over 0.23 acres (Bassette 2003).

Source Feature Identifier 29614
Source Feature Locator Shelby Bypass site 26
Source Feature Descriptor 2000; NCDOT

Source Feature Identifier 29615
Source Feature Locator Shelby Bypass site 27
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT

Survey Type Quantitative ground survey

Survey Date 2000-10-25 **First Observation Date** 2000 **Last Observation Date** 2000-10-25
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 700 **feet** **Max. Elevation** 820 **feet**
EO Observed Area 0.23 **acres**
Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22210

EO Number 201 **Parent EO Number** 214

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics "The entire 0.011 ac site [EO 201, in part] with be impacted by project construction [proposed Shelby Bypass], eliminating 14 DFHL plants... NC DOT proposes to protect Site 26 [EO 201, in part] through a conservation easement. However, if it is not possible to obtain a conservation easement, this entire site, under worst case scenerio, may experience indirect effects. Site 26 is situated within 400 ft of the mechanized clearing line and may be adversely affected due to competition from invasive species and loss of shade" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22213
EO Number 202 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreement with Plaintiff/Requester **Longitude** Not processed per agreement with Plaintiff/Requester

Site Name

Survey Site
Buffalo Creek: Ravine north of SR 2047, BYP site 24 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek: Ravine just north of SR 2047, Proposed Shelby Bypass Site 24. This is a sub EO of Parent EO 214 (Wichmann 2005). Just north of SR 2047 (Borders Road), site 24 [EO 202] sits along both sides of unnamed perennial tributary to Buffalo Creek Not processed per agreement with Plaintiff/Requester (Bassette et al. 2003).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2000-10-25
EO Rank Comment
EO Data **2000:** 1,641 clumps over 3.6 acres (Bassette et al. 2000).

Source Feature Identifier 29612
Source Feature Locator Shelby Bypass Site 24
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Jill Holms, NC Dept. of Transportation
Dale Suiter, NC Dept. of Transportation

Survey Type Quantitative ground survey

Survey Date 2000-10-25 **First Observation Date** 1998-2000 **Last Observation Date** 2000-10-25
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Heavily wooded, perennial tributary to Buffalo Creek (Bassete et al. 2003).
Min. Elevation 720 **feet** **Max. Elevation** 840 **feet**
EO Observed Area 3.60 **acres**
Rep Accuracy High **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22213

EO Number 202 **Parent EO Number** 214

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Additional Topics "...the larget DFHL site within the project corridor, and contains the fourth highest number of plants. Construction activites [for the proposed Shelby bypass] will impact 14 DFHL plants over 0.03 ac of this site [EO 209]" (Bassette et al. 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-09-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22214

EO Number 203 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: 3rd Tributary S of SR 2947, BYP Sites 28 and 29 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek: 3rd Tributary south of SR 2947, Shelby Bypass Sites 28 and 29. This is a sub EO of Parent EO 214 (Wichmann 2005). "Site 28 [EO 203, in part] is located just north of where the proposed US 74 Bypass breaks off from the existing US 74 Bypass, along the steep, wooded slopes of an unnamed tributary to Buffalo Creek" (Bassette 2003).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2007-04-10

EO Rank Comment

EO Data **2007:** 278 plants total observed by NCDOT biologists on 27 April 2006 (site 28) and 10 April 2007 (site 29) (Bassette 2009).
2000: Total of 247 plants at two sites over 1.16 ac observed by NCDOT biologists on 03 October 2000 (Bassette 2003).

Source Feature Identifier 29619
Source Feature Locator Shelby Bypass Sites 28 and 29
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Jennifer Harrison, NC DOT

Survey Type Qualitative ground survey

Survey Date 2007-04-10 **First Observation Date** 2000 **Last Observation Date** 2007-04-10

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Wooded slopes of an unnamed tributary to Buffalo Creek (Bassette 2003).

Min. Elevation 650 **feet** **Max. Elevation** 710 **feet**

EO Observed Area 1.16 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22214

EO Number 203 **Parent EO Number** 214

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Additional Topics "Construction activities [associated with the proposed Shelby Bypass] will impact 0.59 ac of the total 1.11 ac site [EO 203, in part], and 110 of the site's 206 DFHL plants....Site 29 [EO 203, in part] appears to be undeveloped and just outside of the City of Shelby's land development plan. This site is not expected to incur direct or cumulative effects from induced development. However, because this site is situated within 400 ft of the mechanized clearing line, under a worst case scenario this entire site may experience indirect effects due to competition from invasive species" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-03

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22215
EO Number 204 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: S of SR 2128/Johnson Rd, proposed Shelby Bypass site 31 (Sub EO of EO 214).
NCDOT TIP: R-2707

Directions Buffalo Creek: South of SR 2128 (Johnson Road), proposed Shelby Bypass Site 31. This is a sub EO of Parent EO 214 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2000-10-03
EO Rank Comment
EO Data **2000:** Total of 3,094 plants: 2,562 over 1.94 acres at site 31 and 532 at site 43 (Bassette 2003).

Source Feature Identifier 29622
Source Feature Locator Shelby Bypass Site 31
Source Feature Descriptor 2000; NCDOT

Source Feature Identifier 29623
Source Feature Locator Shelby Bypass site 43
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Jennifer Harrison, NC DOT
Survey Type Quantitative ground survey
Survey Date 2000-10-03 **First Observation Date** 2000 **Last Observation Date** 2000-10-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description "Covering the majority of an entire hillside, Site 31 [EO 204, in part] is situated along an unnamed intermittent tributary to Buffalo Creek...The steep, heavily forested site is the highest quality DFHL site along the entire project [proposed US 74 (Shelby) Bypass despite a large clear-cut area located along its western end" (Bassette 2003).
Min. Elevation 650 **feet** **Max. Elevation** 800 **feet**
EO Observed Area 2.00 **acres**
Rep Accuracy High **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22215

EO Number 204 **Parent EO Number** 214

Owner Comments

Management Comments

Protection Comments

Additional Topics "...Construction activities associated with the Bypass exit/entrance ramps will impact the entire site...NCDOT proposes to protect Site 43 [EO 204, in part] through a conservation easement. However, if it is not possible to obtain a conservation easement, the entire site may incur indirect effects relating to the construction of the entrance and exit ramps associated with the existing US 74/proposed US 74 Bypass' eastern interchange. The site's existing land use is undeveloped. The City of Shelby's land development plan calls for low-density residential development in this area which may result in loss of Sire 43 [EO 204, in part]" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-03

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22216

EO Number 205 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: North of SR 2128/Johnson Rd, BYP Site 30 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek: North of SR 2128 (Johnson Road), proposed Shelby Bypass Site 30. This is a sub EO of Parent EO 214 (Wichmann 2005). "Site 30 [EO 205] sits along the densely wooded banks associated with a pond on the northern side of SR 2128 (Johnson Road)" (Bassette 2003).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2000-10-03

EO Rank Comment

EO Data **2000:** 184 plants over 0.28 acres (Bassette 2003).

Source Feature Identifier 29620
Source Feature Locator Shelby Bypass Site 30
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Jennifer Harrison, NC DOT

Survey Type Quantitative ground survey

Survey Date 2000-10-03 **First Observation Date** 2000 **Last Observation Date** 2000-10-03

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Densely wooded banks associated with a pond on the northern side of road (Bassette 2003).

Min. Elevation 700 **feet** **Max. Elevation** 800 **feet**

EO Observed Area 0.28 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22216

EO Number 205 **Parent EO Number** 214

Additional Topics "The proposed US 74 [Shelby] Bypass will impact 13 plants and 0.02 ac by clipping the site's western tip during construction activities" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-03

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22217
EO Number 206

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Ravine N of Creek and SW of I-74, BYP Sites 44, 45, 46, and 47
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek:Ravine north of Buffalo Creek and southwest of I-74, Proposed Shelby Bypass Sites 44, 45, 46, and 47 (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2007-04-10
EO Rank Comment
EO Data 90 plants total at all sites county by NCDOT biologists on 28 April 2006 (site 44, 45, 46) and 10 April 2007 (site 47) (Bassette 2009). 27 clumps over 0.02 ac observed by NCDOT biologists in 2003 (Bassette 2003).

Source Feature Identifier 29624
Source Feature Locator Buffalo Creek: Ravine N of Creek and SW of I-74, BYP Sites 45, 46, and 47
Source Feature Descriptor 2003, Bassette

Source Feature Identifier 29625
Source Feature Locator Buffalo Creek: Ravine N of Creek and SW of I-74, BYP Site 44
Source Feature Descriptor 2003, Bassette

Surveyors Tim Bassette, NCDOT **Survey Type**
Survey Date 2007-04-10 **First Observation Date** 2003 **Last Observation Date** 2007-04-10
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** This EO was not linked with sub EO 204 (and principal EO 214) because I-74 is considered a major highway and separation barrier (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22217

EO Number 206

Protection Comments

Additional Topics Near the proposed Shelby Bypass but not expected to be impacted, see U03BAS01NCUS (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.

VERSION

Version Author Robinson **Version Date** 2015-10-27

Transcribed By Wichmann **Transcription Date** 2005-09-12

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22218
EO Number 207

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Grover

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Tributary south of I-74 & east of Creek, BYP site 48
NCDOT TIP: R-2707

Directions Buffalo Creek: Triburary south of I-74 and east of Buffalo Creek, proposed Shelby Bypass Site 42. Located west of SR 2245 and north of SR 2243 (Wichmann 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2000
EO Rank Comment
EO Data Tim Bassett et al observed 346 clumps over 0.4696 acres in 2000 (Bassette et al. 2000).

Source Feature Identifier 29626
Source Feature Locator Buffalo Creek: Triburary south of I-74 and east of Buffalo Creek, proposed Shelby Bypass DOT Site 42.
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation Personnel

Survey Type Qualitative ground survey

Survey Date 2000 **First Observation Date** 1988-2000 **Last Observation Date** 2000
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 720 **feet** **Max. Elevation** 790 **feet**
EO Observed Area 0.47 **acres**
Rep Accuracy Medium **Separation Comments** This EO was not linked with EO 208 because the two are separated by a major highway (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics Near the proposed Shelby Bypass but not expected to be impacted, see U03BAS01NCUS (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22218

EO Number 207

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.

VERSION

Version Author Robinson **Version Date** 2015-12-11

Transcribed By Wichmann **Transcription Date** 2005-09-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22219
EO Number 208

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Grover
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Sites 32-35 (TIP R-2707, R-2824)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek: Potts Creek, tributaries north of I-74, Proposed Shelby Bypass Sites 32, 33, 34, 35. [Note: this occurrence originally had site 36 mapped; this site was subsequently identified as being H. minor. Therefore, source feature corresponding to site 36 was deleted].

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2007-04-27
EO Rank Comment
EO Data J. Wagner et al. observed 50-100 plants on 15 March 2012. Plants in two subpopulations about 100 m apart. Heavily impacted by invasives on southeast facing slope. Hexastylis minor also present (Wagner 2012). 3,572 plants counted at 4 locations by NCDOT biologists on 27 April 2007 (site 34) and 10 April 2007 (sites 32, 33, and 35) (Bassette 2009). 3,522 in 5 groups (sites) over 5.8 acres (Bassette 2003, NCDOT 2008).

Source Feature Identifier 29627
Source Feature Locator Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Sites 32
Source Feature Descriptor 1998-2000, NCDOT

Source Feature Identifier 29629
Source Feature Locator Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Site 34
Source Feature Descriptor 1998-2000; NCDOT

Source Feature Identifier 29630
Source Feature Locator Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Site 35
Source Feature Descriptor 1998-2000, NCDOT

Source Feature Identifier 29695
Source Feature Locator Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Site 33
Source Feature Descriptor 1998-2000, NCDOT

Surveyors Jennifer Harrison, NC DOT
Logan Williams, NC DOT
Matt Haney, NC DOT
Jared Gray, NC DOT
Tim Bassette, NC DOT
Jackie Wagner, ASU

Survey Type Quantitative ground survey

Survey Date 2012-03-15 **First Observation Date** 1998-2000 **Last Observation Date** 2012-03-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22219

EO Number 208

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description EO is bisected by a powerline (Wichmann 2005). "Site 32 [EO 208, in part] sits along the hardwood forest stream bank and slopes of three extremely incised intermittent tributaries to Potts Creek...Site 34 [EO 208, in part] is a high quality site with no invasive species, Site 36 [EO 208, in part] is a hgih quality site despites size, lots of invasive kudzu located adjacent to (but not in or ajoining) site (Bassette 2003)."

Min. Elevation 700 **feet** **Max. Elevation** 810 **feet**

EO Observed Area 5.76 **acres**

Rep Accuracy Medium

Separation Comments This EO was not linked with EO 207 (less than 2km away) because the two are separated by a major highway (Robinson 2015).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Private	

Owner Comments

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009). This EO will be impacted by the proposed Shelby Bypass, see U03BAS01NCUS (Wichmann 2005).

Additional Topics "The proposed relocation of SR 2245 (Bethlehem Road) [for proposed Shelby Bypass] will perpendicularly cross Site 32 [EO 208, in part], thereby impacting 83 plants over 0.18 ac from construction activies...the remaining parts of Site 32 not impacted by direct construction activities will be protected by interrelated and interdependent on-site conservation actions. According to the Cleveland County projected land use plan, the area around exising US 74 near site 32 is expected to undergo commercial and industrial develpoment beyond 2005...NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. However, if this is not possible portions of these sites may incur indirect effects...According to the Cleveland County projected land use plan, the area around exisiting US 74 near sites 33, 34, and 35 is expected to undergo commercial and industrial development beyond 2005...Site 36 [EO 208, in part] will be directly impacted by construction activities (Bassette 2003)."

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author Robinson **Version Date** 2015-09-30

Transcribed By Wichmann **Transcription Date** 2005-09-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22221

EO Number 209 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Tributary E of the County Fairgrounds, BYP Site 22
(Sub EO of EO 214)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek: Tributary east of the County Fairgrounds, Proposed Shelby Bypass Site 22. This is a sub EO ofParent EO 214 (Wichmann 2005). "Located just east of SR 2063 (Kemper Road), Site 22 sits along the stream banks of unnamed perennial and intermittent tributaries to Buffalo Creek" (Bassette 2003).

SURVEY INFORMATION

EO Rank BC - Good or fair estimated viability **EO Rank Date** 2000-10-26

EO Rank Comment

EO Data **2000:** 332 plants over 1.02 acres, of these approximately 136 plants over 0.42 acres within construction limits (Bassette 2003).

Source Feature Identifier 29644

Source Feature Locator Shelby Bypass Site 22

Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT

Survey Type Quantitative ground survey

Survey Date 2000-10-26 **First Observation Date** 2000 **Last Observation Date** 2000-10-26

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation 750 **feet** **Max. Elevation** 800 **feet**

EO Observed Area 1.02 **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22221

EO Number 209 **Parent EO Number** 214

Management Comments

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Additional Topics Subject to direct impacts associated with the proposed Shelby Bypass (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-03

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22233
EO Number 210

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Longview

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Drowning Creek, unnamed tributary at SR 1628
NCDOT TIP: R-2707

Directions Catawba River: Drowning Creek, unnamed tributary at SR 1628 (Bassette 2003).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2001-10
EO Rank Comment
EO Data As of October 2001, no direct, indirect, or cumulative impacts to [EO] have occurred since project construction (Bassette 2003).

Source Feature Identifier 29648
Source Feature Locator Catawba River: Drowning Creek, unnamed tributary at SR 1628
Source Feature Descriptor 2001; Bassette

Surveyors Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation Personnel

Survey Type Qualitative ground survey

Survey Date 2001-10 **First Observation Date** 1998-2000 **Last Observation Date** 2001-10
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Basic EO data needed; GPS data needed (Wichmann 2005).

DESCRIPTION

General Description
Min. Elevation 1,000 **feet** **Max. Elevation** 1,100 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics "B-3122: THis [NCDOT] project replaces Bridge No. 24 over an unnamed creek that crosses SR 1628 in Burke County. The project let date was February 2001 and construction was completed in August of that same year... The project permits do not authorize impacts to DFHL. The October field review indicated that no direct, indirect, or cumulative impacts to DFHL have occurred since project contruction (Bassette 2003).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22233

EO Number 210

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U07MOY01NCUS	Moye, W.S. 2007. Highly Ranked Rare Plants of Smith Cliffs, Burke County, North Carolina. Unpublished notes.

VERSION

Version Author Wichmann **Version Date** 2005-09-19

Transcribed By Wichmann **Transcription Date** 2005-09-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22234
EO Number 211

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
First Broad Hop-Hornbeam Natural Area

Survey Site
First Broad River: Hop-Hornbeam Natural Area and unnamed tributary (parent EO of sub EOs 072 and 194)

Directions First Broad River: Hop-Hornbeam Natural Area and unnamed tributary north of SR 1827. This is a parent EO of two Sub EOs: 072 and 194 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2002-04-26
EO Rank Comment
EO Data This is a parent EO of two Sub EOs: 072 and 194 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 29649
Source Feature Locator First Broad River: Hop-Hornbeam Natural Area and unnamed tributary north of SR 1827
Source Feature Descriptor Parent EO 211

Surveyors **Survey Type**
Survey Date 2002-04-26 **First Observation Date** 2000-11-01 **Last Observation Date** 2002-04-26
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent EO217 is located 2.3km west; EO 195 is located 2.8km to the east (Amoroso 2015)
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22234

EO Number 211

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2016-03-23

Transcribed By Wichmann **Transcription Date** 2005-12-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22235

EO Number 212 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Slope along Tributary just N of SR 2047, BYP Site 23 (Sub EO of EO 214).
NCDOT TIP: R-2707

Directions Buffalo Creek: Slope along Tributary just N of SR 2047, Proposed Shelby Bypass site 23. This is a sub EO of Parent EO 214 (Wichmann 2004).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2000-10-26

EO Rank Comment

EO Data **2000:** 97 plants seen over 0.48 acres by Bassette et al. on 26 October 2000 (Bassette 2003).

Source Feature Identifier 29651
Source Feature Locator Shelby Bypass site 23
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT

Survey Type Quantitative ground survey

Survey Date 2000-10-26 **First Observation Date** 1998-2000 **Last Observation Date** 2000-10-26

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description "Small amount of invasive English Ivy" (Bassette 2003).

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22235

EO Number 212 **Parent EO Number** 214

Additional Topics "According to the City of Shelby's existing land use plan, Site 14 [EO 212] sits in an undeveloped tract of land. The city's land development plan proposes low-density residential development on this land parcel. Consequently, private development resulting in the loss of Site 14 would be considered a cumulative effect" (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22236

EO Number 213 **Parent EO Number** 214

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Ravine just S of SR 2047, BYP Site 25 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions Buffalo Creek: Ravine just south of SR 2047, Shelby Bypass Site 25. This is a sub EO of Parent EO 214 (Wichmann 2005). "South of SR 2047 (Borders Road) and east of Ruckers Road, situated along forested slopes and stream bank of an unnamed intermittent tributary to Buffalo Creek" (Bassette 2003).

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2012-03-15

EO Rank Comment

EO Data **2012:** Wagner et. al. observed 50-100 plants on 15 March 2012. (Wagner 2012).
2000: 743 over 2.77 acres (Bassette 2003).

Source Feature Identifier 29652
Source Feature Locator Shelby Bypass Site 25
Source Feature Descriptor 2000; NCDOT

Surveyors Tim Bassette, NC DOT
Jared Gray, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT
Jackie Wagner, ASU

Survey Type Quantitative ground survey

Survey Date 2012-03-15 **First Observation Date** 2000-10-25 **Last Observation Date** 2012-03-15

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Steep, forested slopes and stream banks of an unnamed intermittent tributary to Buffalo Creek. English Ivy (hederal helix) dominates the site's vegetative ground cover (Bassette 2003).

Min. Elevation 760 **feet** **Max. Elevation** 810 **feet**

EO Observed Area 2.77 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22236

EO Number 213 **Parent EO Number** 214

Owner Type	Owner Name	Notes
State government	NC Department of Transportation	

Owner Comments

Management Comments Site to be affected by proposed Shelby bypass. Site will be part of an extended DOT right of way.

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

Additional Topics "Construction activities will bisect the site [EO 213], thereby impacting 158 DFHL plants over 0.59 ac situated witin the contruction limits...The remaining part of these sites not impacted by direct construction activities will be protected by interrelated and interdependent on-site conservation actions. Indirect effects from induced development will not occur because the proposed Bypass/SR 2047 (Borders Road) interchage is at a grade. Cumulative effects are not assumed to occur because the existing land use (single family residential) and proposed land development (low density residential) will, in effect, remain the same around Sites 24 and 25 [EO 213, in part] (Bassette 2003).

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author Amoroso **Version Date** 2015-10-19

Transcribed By Wichmann **Transcription Date** 2005-10-03

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22237
EO Number 214

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Tributaries N and S of SR 2047 (parent EO of sub EOs: 201-205, 209, 212, and 213)

Directions Buffalo Creek: Tributaries north and south of SR 2047. This is a parent EO of 7 sub EOs: 201, 202, 203, 204, 205, 209, 212, and 213 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2000-10-26
EO Rank Comment
EO Data This is a parent EO of 7 sub EOs: 201, 202, 203, 204, 205, 209, 212, and 213 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 29657
Source Feature Locator Buffalo Creek: Tributaries north and south of SR 2047
Source Feature Descriptor Parent EO 214

Surveyors **Survey Type**
Survey Date 2012-03-15 **First Observation Date** 1998-2000 **Last Observation Date** 2012-03-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Parent EO 214 consists of sub occurrences along an unnamed tributary to Buffalo Creek below Kings Mountain Lake. Parent EOs 214, 216, and 232 occur in an arc along Kings Mountain Lake and its tributaries, and are located within 2 km of each other in a landscape dissected by roads and scattered development (Amoroso 2015). All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas
Owner Type **Owner Name** **Notes**
Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22237

EO Number 214

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.

VERSION

Version Author	Amoroso	**Version Date**	2015-09-23
Transcribed By	Wichmann	**Transcription Date**	2005-10-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22250
EO Number 216

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Creek: Kings Mountain Reservoir:, tribs N & S of SR 2068 & E of US 180 (parent of 28, 197-200)

Directions Buffalo Creek: Kings Mountain Reservoir: Tributaries north and south of SR 2068 and east of US 180. This is a parent EO of six sub EOs: 28, 196, 197, 198, 199, and 200 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2000-11-01
EO Rank Comment
EO Data This is a parent EO of four sub EOs: 197, 198, 199, and 200 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 29714
Source Feature Locator Buffalo Creek: Kings Mountain Reservoir
Source Feature Descriptor Parent EO 216

Surveyors **Survey Type**
Survey Date 2016-08-03 **First Observation Date** 1998-2000 **Last Observation Date** 2016-08-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Parent EO 216 consists of sub occurrences along tributaries to Kings Mountain Lake. Parent EOs 214, 216, and 232 occur in an arc along Kings Mountain Lake and its tributaries, and are located within 2 km of each other in a landscape dissected by roads and scattered development (Amoroso 2015). All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas
Owner Type **Owner Name** **Notes**
Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22250

EO Number 216

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F04CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.

VERSION

Version Author Amoroso **Version Date** 2016-08-19

Transcribed By Wichmann **Transcription Date** 2005-12-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22256
EO Number 217

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Broad River: Brushy Creek, Tributaries N of SR 1308 and E of NC 226, (parent EO of Sub EOs 190,191,192,193, & 305).

Directions Broad River: Brushy Creek, Tributaries north of SR 1308 and east of NC 226. This is a parent EO of sub EOs 190, 191, 192, and 193, and 305 (Robinson 2015). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2016-10-27
EO Rank Comment
EO Data This is a parent EO of sub EOs 190, 191, 192, and 193 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 29730
Source Feature Locator Broad River: Brushy Creek, Tributaries north of SR 1308 and east of NC 226.
Source Feature Descriptor Parent EO 217

Surveyors **Survey Type**
Survey Date 2016-10-27 **First Observation Date** 2000-10-27 **Last Observation Date** 2016-10-27
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22256

EO Number 217

DOCUMENTATION

Reference Code	Citation
F15CON01NCUS	2015. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT01NCUS	Haney, Matt. 2015. 2013 Hexastylis naniflora (Dwarf-Flowered Heartleaf) Portion of Element Occurrence No. 191: Site 7 Inventory and Monitoring Report US 74 Shelby Bypass (TIP R-2707) Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Robinson **Version Date** 2015-09-03

Transcribed By Wichmann **Transcription Date** 2005-09-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22266
EO Number 219

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Smith Cliff/Henry Fork River

Survey Site
South Fork Catawba River: Henry Fork, Upper Fork

Directions South Fork Catawba River, Henry Fork, Upper Fork. Northeast side of Henry Fork River about 250 meters northwest of the River Road bridge, on both sides of an old roadbed behind a small field (Franklin and Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05-06
EO Rank Comment
EO Data 31 plants total, 10 flowering observed by Franklin and Wichmann on 06 May 2005 (Franklin and Wichmann 2005).

Source Feature Identifier 29746
Source Feature Locator South Fork Catawba River, Henry Fork, Upper Fork
Source Feature Descriptor 2005; NCNHP

Surveyors Misty Fraklin, NHP
Brenda Wichmann, NHP
Survey Type Quantitative ground survey

Survey Date 2005-05-06 **First Observation Date** 2005-05-06 **Last Observation Date** 2005-05-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Banks of old roadbed cutting through wooded slopes; Associated species include: Rhododendron maximum, Lecothoe fontanesiana, Calycanthus floridus, Pinus strobus, Pyrularia pubera, Trillium catesbaei and Gaultheria procumbens (Franklin and Wichmann 2005).
Min. Elevation 1,160 **feet** **Max. Elevation** 1,190 **feet**
EO Observed Area **acres**
Rep Accuracy High
Separation Comments EO 303 is within 2.0 kilometers of this EO, but is separated by unsuitable habitat (Padgett 2015). EO 303 also has characteristics of both H. naniflora and H.heterophylla. This area may be a hybridization zone, and is therefore kept as a separate EO.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22266

EO Number 219

DOCUMENTATION

Reference Code	Citation
F05FRA01NCUS	Franklin, M. A. 2005. Field notebook for site visits conducted in 2005.
F05WIC01NCUS	Wichmann, B. 2005. Field notebook for field survey/site visits conducted by Brenda Wichmann in 2005.

VERSION

Version Author Robinson **Version Date** 2015-10-27

Transcribed By Wichmann **Transcription Date** 2005-09-21

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22281
EO Number 222 **Parent EO Number** 226

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Glen Alpine

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Lake James, SW of Bridge downstream from Powerhouse (Sub of 226)

Directions Lake James, northeast facing slope located southeast of the Lake, 0.25 miles southeast of Linville dam and 0.2 miles south of powerhouse. This is a sub EO of Parent EO 226. This occurrence is designated population # 1 in Cole 2004.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2006-10-25
EO Rank Comment
EO Data **2006:** 156 clumps counted during casual survey (more plants surely present) on 25 October 2006 by Franklin & McCracken; most plants seen were very depauperate, probably due to dense shade from young pines (Franklin 2006).
2003: Approximately 300 plants seen during late March-early April (Wolf 2003).

Source Feature Identifier 34242
Source Feature Locator Paddy Creek # 1, Lake James, northeast facing slope located southeast of the Lake,
Source Feature Descriptor 2006; NCNHP and Devine Tarbell & Associates, Inc

Source Feature Identifier 88735
Source Feature Locator Plot 1, Paddy Creek # 1, Lake James
Source Feature Descriptor 2006; NCNHP and Devine Tarbell & Associates, Inc; Plot 1

Source Feature Identifier 88736
Source Feature Locator Plot 2, Paddy Creek # 1, Lake James
Source Feature Descriptor 2006; NCNHP and Devine Tarbell & Associates, Inc; Plot 2

Source Feature Identifier 88737
Source Feature Locator Plot 3, Paddy Creek # 1, Lake James
Source Feature Descriptor 2006; NCNHP and Devine Tarbell & Associates, Inc; Plot 3

Surveyors Misty Franklin, NCNHP
James McCracken, Devine Tarbell & Associates, Inc.
Michael Wolfe, Water Oak
Survey Type Qualitative ground survey

Survey Date 2006-10-25 **First Observation Date** 2003-Spring **Last Observation Date** 2006-10-25
Data Sensitive Element N **Comments**
Monitoring Needs Comments McCracken (Devine Tarbell & Associates, Inc.) established 3 permanent monitoring plots in this area to monitor survivability over time. Plot centroid coordinates taken by Franklin (2006): 1 - 35.7403364, -81.83835698, 2 - 35.73988452, -81.83936063, 3 - 35.73985769, -81.84001836 (all NC State Plane, NAD 1983).
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dense white pine stand, approximately 30 years old. Habitat in this location is severely degraded with very dense shade from the young pines and very suppressed understory. Associated species include Pinus strobus, Cornus florida, Liriodendron tulipifera, Liquidambar styraciflua, Kalmia latifolia, Galax urceolata, Ilex opaca, Polystichum acrostichoides, Quercus alba, Goodyera sp., Sassafras albidum, Mitchella repens, and Cypripedium acaule (Franklin 2006).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22281

EO Number 222 **Parent EO Number** 226

Min. Elevation 1,150 **feet** **Max. Elevation** 1,210 **feet**

EO Observed Area 5.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: A small portion of this population may have been negatively affected by siltation from a nearby large-scale soil moving project. This problem was quickly discovered by Duke Energy staff, soil deposits were removed, and silt-fencing was installed to prevent further siltation. Likely fewer than 10 plants Hexastylis naniflora plants were affected by this incident (Franklin 2006).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Duke Energy	Contact James McCracken, consultant, for access to occurrence.

Owner Comments James McCracken, Devine Tarbell & Associates, Inc., 704.342.7373, James.McRacken@DevineTarbell.com.

Management Comments This population would benefit from thinning of the white pine stand and allowing the natural community to regenerate. The pines are obviously suppressing the population as well as the natural community (Franklin 2006).

Protection Comments Duke Energy has protected this population by placing a conservation buffer surrounding the areas inhabited by Hexastylis naniflora (McCracken pers. comm. to Franklin 2006). It is unknown whether this is a permanently binding agreement and who will hold the easement in the long term.

Additional Topics

DOCUMENTATION

Reference Code	Citation
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.

VERSION

Version Author Amoroso **Version Date** 2015-10-21

Transcribed By Wichmann **Transcription Date** 2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22282

EO Number 223 **Parent EO Number** 226

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Glen Alpine

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Lake James, Paddy Creek, unnamded tributary NE of dam (Sub of 226)

Directions Lake James, Paddy Creek, south side of Powerhouse Road, 0.15 mile south of powerhouse, north side of power transmission line. See map for details. This is a sub EO of Parent EO 226. This occurrence is designated population # 2 in Cole 2004.

SURVEY INFORMATION

EO Rank X - Extirpated **EO Rank Date** 2006-10-25

EO Rank Comment

EO Data **2006:** All plants in sub-population # 2 are expected to be destroyed by seismic remediation project (Cole 2004, McCracken pers. comm. to Franklin 2006). USFWS Biological Opinion (2004) authorized extirpation of 'population 2'. The Amended Biological Opinion (2005) acknowledged impacts to 'populations 1 and 3' (Wells 2006).
2003: Approximately 700 plants (Wolfe 2003)

Source Feature Identifier 34241

Source Feature Locator Paddy Creek #2, Lake James, Paddy Creek, south side of Powerhouse Road

Source Feature Descriptor 2006; NCNHP and Devine Tarbell & Associates, Inc.

Surveyors Misty Franklin, NCNHP
James McCracken, Devine Tarbell & Associates, Inc.
Michael Wolfe, Water Oak

Survey Type Qualitative ground survey

Survey Date 2006-10-25 **First Observation Date** 2003-04 **Last Observation Date** 2006-10-25

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation 1,150 **feet** **Max. Elevation** 1,210 **feet**

EO Observed Area 17.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Duke Energy	

Owner Comments

Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22282

EO Number 223 **Parent EO Number** 226

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-21

Transcribed By Wichmann **Transcription Date** 2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22283

EO Number 224 **Parent EO Number** 226

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Glen Alpine

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Lake James, Paddy Creek, SE of the dam (Sub of 226)

Directions Lake James, Paddy Creek, bluff on south side of creek, located 0.2 miles southeast of Paddy Creek Dam. See map for details. This is a sub EO of Parent EO 226. This occurrence is designated population # 3 in Cole 2004.

SURVEY INFORMATION

EO Rank BC - Good or fair estimated viability **EO Rank Date** 2006-10-25

EO Rank Comment

EO Data **2006:** 87 clumps counted during casual survey (more plants surely present) on 25 October 2006 by Franklin & McCracken; most plants seen were very depauperate, probably due to dense shade from young pines (Franklin 2006).
2003: Approximately 700 plants (Wolfe 2003).

Source Feature Identifier 34243
Source Feature Locator Paddy Creek # 3, bluff on south side of creek, east of trail
Source Feature Descriptor 2006; Devine Tarbell & Associates, Inc.

Source Feature Identifier 34244
Source Feature Locator Paddy Creek # 3, west side of trail
Source Feature Descriptor 2006; Devine Tarbell & Associates, Inc.

Source Feature Identifier 88545
Source Feature Locator Plot 1
Source Feature Descriptor 2006; Franklin and McCraken; Plot 1

Source Feature Identifier 88546
Source Feature Locator Plot 2
Source Feature Descriptor 2006; Franklin and McCracken; Plot 2

Source Feature Identifier 88547
Source Feature Locator Plot 3
Source Feature Descriptor 2006; Franklin and McCraken; Plot 3

Surveyors Misty Franklin, NCNHP
James McCracken, Devine Tarbell & Associates, Inc.
Michael Wolfe, Water Oak

Survey Type Qualitative ground survey

Survey Date 2006-10-25 **First Observation Date** 2003-04 **Last Observation Date** 2006-10-25

Data Sensitive Element N **Comments**

Monitoring Needs Comments McCracken (Devine Tarbell & Associates, Inc.) established 3 permanent monitoring plots in this area to monitor survivability over time. Plot centroid coordinates taken by Franklin (2006): 1 - 35.72939725, -81.84835517, 2- 35.72957662, -81.84696201, 3- 35.73045848, -81.84637888 (all NC State Plane, NAD 1983).

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dense white pine stand, approximately 20-30 years old. Habitat in this location is severely degraded with very dense

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22283

EO Number 224 **Parent EO Number** 226

shade from the young pines and very suppressed understory. Associated species include Pinus strobus, Fagus grandifolia, Cornus florida, Hamamelis virginiana, Toxicodendron radicans, Galax urceolata, Ilex opaca, and a small amount of Ligustrum sinense around the edges of the population (Franklin 2006).

Min. Elevation 1,160 **feet** **Max. Elevation** 1,210 **feet**

EO Observed Area 5.00 **acres**

Rep Accuracy Very High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Duke Energy	Contact James McCracken, consultant, for access to occurrence.

Owner Comments James McCracken, Devine Tarbell & Associates, Inc., 704.342.7373, James.McRacken@DevineTarbell.com.

Management Comments

Protection Comments Duke Energy has protected this population by placing a conservation buffer surrounding the areas inhabited by Hexastylis naniflora (McCracken pers. comm. to Franklin 2006). It is unknown whether this is a permanently binding agreement and who will hold the easement in the long term.

Additional Topics

DOCUMENTATION

Reference Code	Citation
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-21

Transcribed By Wichmann **Transcription Date** 2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22284

EO Number 225 **Parent EO Number** 226

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Glen Alpine

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

Site Name

Survey Site
Lake James, Linville Dam (sub EO of EO 226)

Directions Lake James, north side of Linville River, located south of the Linville Dam and north of powerhouse. This is a sub EO of Parent EO 226.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2006-10-04

EO Rank Comment EO Rank based on EO Rank Specs for this species and most recent EO data.

EO Data **2005:** 370 plants counted in quick survey by Franklin & Mason on 4 October 2006, at least 500 plants probably present (Franklin 2006).
2002-2003: Approximately 300 plants (Wolfe 2003).

Source Feature Identifier 29799

Source Feature Locator Lake James, north side of Linville River, located south of the Linville Dam and north of powerhouse

Source Feature Descriptor 2006; NCNHP

Surveyors Michael Wolfe, Water Oak
Misty Franklin, NCNHP
Suzanne Mason, NCNHP

Survey Type Qualitative ground survey

Survey Date 2005-10-04 **First Observation Date** 2002-2003 **Last Observation Date** 2005-10-04

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Intact natural community (Dry-mesic Oak-Hickory Forest grading into Acidic Cove to west along creek) with Rhododendron maximum, Liriodendron tulipifera, Quercus rubra, Q. montana, Liquidambar styraciflua, Oxydendrum arboreum, Kalmia latifolia, Pinus virginiana, Fagus grandifolia, Carya tomentosa, Cornus florida, Ilex opaca, Galax urceolata, Lobelia inflata, Polystichum acrostichoides, Cypripedium acaule, Medeola virginiana, black racer snake, and box turtle (Franklin 2006).

Min. Elevation 1,100 **feet** **Max. Elevation** 1,200 **feet**

EO Observed Area 1.00 **acres**

Rep Accuracy High

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Duke Energy	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22284

EO Number 225 **Parent EO Number** 226

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-21
Transcribed By	Wichmann	**Transcription Date**	2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22285
EO Number 226

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Glen Alpine

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Lake James (parent EO of Sub EOs: 045, 222, 223, 224, and 225)

Directions Catawba River: Lake James. This is a parent EO that includes 5 sub EOs: 045, 222, 223, 224, and 225 (Wichmann 2005). See each sub EO for detailed directions. See map.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2006-10-25
EO Rank Comment
EO Data This is a parent EO that includes 5 sub EOs: 045, 222, 223, 224, and 225 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 34245
Source Feature Locator Catawba River: Lake James
Source Feature Descriptor Parent EO 226

Surveyors **Survey Type**
Survey Date 2006-10-25 **First Observation Date** 1998-05-18 **Last Observation Date** 2006-10-25
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description See each sub EO for description.
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Very High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. This is an isolated Parent Element Occurrence record with the next nearest records 17-20 kilometers away (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Duke Energy	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22285

EO Number 226

DOCUMENTATION

Reference Code	Citation
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.

VERSION

Version Author Amoroso **Version Date** 2015-10-05

Transcribed By Wichmann **Transcription Date** 2005-09-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22306
EO Number 227

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lenoir

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Peaked Top Rare Plant Site

Survey Site
Peaked Top Rare Plant Site: Catawba River Watershed - Foothills Landfill

Directions Catawba River Watershed: along drainiages to unnamed tributary to Abingdon Creek, approximately 0.5 miles north of Abbington Road (SR 1310), between Grassy knob and Peaked Top at Foothils Landfill (based on shapefiles provided by J. Gay, ESI).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2014-04-19
EO Rank Comment
EO Data Golder Associates collected data between 14-19 April 2014, from 15-0.1 acre monitoring plots during 2014. Plants were decreased to estimated 505 plants per acre, and approximately 16,463 plants within the entire tract (Golder 2014). Numerous plants occurring throughout the site in maturing forest. Vegetative plants were observed on 7-27-2006. (Padgett). Wells reported 30,780 plants were observed by Golder Associates Inc. staff in 2006. Of these, 6,150 were estimated to be impacted by construction activities; 30,780 plants are to be protected on-site in a 260 acre conservation area (Wells 2006). Approximately 28,712 individuals over 32.55 acres, determined by multiplying the average plant desity in plots (822 plants/acre) by the total area occupied (32.55 acres): 1,323 individual plants counted in fifteen 0.1 acre monitoring plots established over 32.55 acres in June 2005 (Golder Associates 2005). 16,000-19,000 clumps in about 33 acres reported by J. Gay et al. in April 2003. Plants in flower; some flowers sent to experts to confirm identification. H. heterophylla may be co-habitating at the same drainages (Gay 2003).

Source Feature Identifier 35329
Source Feature Locator Peaked Top Rare Plant Site
Source Feature Descriptor 2003-04, Gay

Surveyors J. Gay, Environmental Services Inc., 2003
Golder Associates Personnel
James Padgett, NHP
Carolyn Wells, USFWS

Survey Type Qualitative ground survey

Survey Date 2014-04-19 **First Observation Date** 2003-04 **Last Observation Date** 2014-04-19
Data Sensitive Element N **Comments**
Monitoring Needs Comments Permanent monitoring plots and baseline data established to allow continued monitoring of Hexastylis naniflora (Golder Associates 2005).
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Young sucessional pine stands at the southern portion of the watershed and a more exposed mixed hardwood sucessional forest at the northern end, invasive exotic species encrouchment not significant (Golder Associates 2005). Twenty of the 33 acres is considered atypical habitat (Gay 2003).
Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area 32.55 **acres**
Rep Accuracy High **Separation Comments** EO is more than 2.0 Kilometers from another EO of the same species (Wichmann 2005).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22306

EO Number 227

General Comments: Specimens collected by Moye in 2007 were sent to L. L. Gaddy for confirmation (Moye & Gaddy correspondence 2007). Specimens sent to and confirmed by both Gaddy and Padgett in 2004 (Padgett 2008).

OWNERSHIP

Managed Areas Foothills Conservancy of North Carolina Easement

Owner Type	Owner Name	Notes
Local government	Caldwell County	Caldwell County Landfill site.

Owner Comments

Management Comments Non-native species will be removed from the property as part of the management plan (Gay 2003).

Protection Comments Foothills Conservancy of North Carolina currently monitors an established easement (Padgett 2008). Area will be placed under a conseravation easement in 2005. No public access to the property (Gay 2003).

Additional Topics Population decline from 2009 to 2014 is believed to be a response to the severe drought that occurred in this region during 2007 and 2008. Predation on the plants, presumably by woodland voles, was also noticed as a continuing phenomenon during this monitoring effort; it is now judged an observable part of the reduction in the population. Four of the plots were impacted by a wildfire during the winter of 2009 and not sampled at that time. Results from the current survey indicate that the fire has reduced growth and vigor for the plants located within these plots. An unusually cold winter and prolonged cool spring has also contributed to lower leaf and flower counts (Golder Associates 2014).

"Republic Services of NC, LLC (Republic) obtained Permit 200231111 from the U. S. Army Corps of Engineers under Section 404 of the Clean Water Act in December 2004 for discharge of fill into wetlands and streams in order to expand the Foothills Solid Waste Landfill in Caldwell County, NC. The expansion will impact sub-populations of Hexastylis naniflora...Republic proposed to mitigate the impacts to H. naniflora by preserving other sub-populations within 260 acres conservation easement on property owned by Caldwell County adjacent to the Foothills Landfill expansion (Golder Associates 2005).

DOCUMENTATION

Reference Code	Citation
G06PAD02NCUS	Padgett, James. 2008. Caldwell County Natural Areas Inventory. North Carolina Natural Heritage Program, Department of Environment and Natural Resources, Raleigh, NC.
U05GOL01NCUS	Golder Associates. 2005. Report on Baseline Monitoring of Hexastylis naniflora Foothills conservation Area Caldwell County, North Carlina. 4pp and Appendix
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
U14GOL01NCUS	Golder Associates. 2014. Hexastylis naniflora Foothills Conservation Area Year 8 Monitoring Report. Caldwell County, North Carlina. 10pp and Appendices.

VERSION

Version Author Robinson **Version Date** 2015-10-01

Transcribed By Wichmann **Transcription Date** 2005-10-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22324
EO Number 229

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Second Broad River: Hogpen Branch
Hogpen Branch transplant area

Directions Second Broad River: Hogpen Branch. Southern Rutherford County, 1 mile southwest of Henrietta and 3.75 miles east of Harris, NC. EO is located south of Hogpen Branch and north of Ferry Road (SR 2117), along an unnamed tributary (Padgett 2005).

SURVEY INFORMATION

EO Rank C? - Possibly fair estimated viability **EO Rank Date** 2007

EO Rank Comment Part of the population was transplanted from within the impact area of an asphalt and gravel plant to the larger population prior to construction (USFWS 2007). This population is thought to have been moved to a small area on the tract prior to development, but details are unknown (Robinson 2015). EO rank based on EO rank specs written for this species (Padgett 2005).

EO Data Approximately 10% of the plants that were to be impacted from the asphalt plant, and were moved within the larger part of the population (USFWS 2007). Wells reported 500-550 plants in 2006, all of which are expected to be impacted by construction activities. Off-site mitigation is to occur [i.e. the plants are to be moved to a protected area off-site] (Wells 2006 [G06WEL01NCUS]). Estimate 300-400 plants over 0.13 mile along small unnamed tributary of Hogpen Branch (Padgett 2005).

Source Feature Identifier 29906
Source Feature Locator Hog Pen Branch
Source Feature Descriptor 2005; Padgett

Surveyors Allen Ratzlaff, USFWS
James Padgett, NHP

Survey Type Qualitative ground survey

Survey Date 2005-10-03 **First Observation Date** 2005-08-02 **Last Observation Date** 2005-10-03

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Immediately adjacent to new gravel and aphalt quarry, based on aerial imagery observations (Robinson 2015). Dry-Mesic Oak-Hickory Forest encrouched by invasive species to the south and improved quality to the north. Quercus alba, Lirisdendron tulipifera, Carya tomentosa, and Acer rubrum dominant in the canopy. The understory/shrub layer is sparse with Oxydendrum aboreum, Cornus florida, Nyssa sylvatica, Viburnum nudiflorum, Ilex opaca, and Smilax glauca. The herb layer is sparse throughout with Hypericum sp., sanicula canadense, Passiflora lutea, Desmodium sp., Helianthus sp., Aristolochia serpentaria, Polystichum acrostichoides. Invasive species inlcude: Rosa multiflora, Ligusicum sinense, and Hedera helix. The landscape around this site varies greatly with a cutover to the north and west, a home and numerous invasives to the south (Padgett 2005).

Min. Elevation 787 **feet** **Max. Elevation** 853 **feet**
EO Observed Area 1.32 **acres**

Rep Accuracy High

Separation Comments EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22324

EO Number 229

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Steve Huskey	1-828-657-4485
Corporation	? Whitmire	1-706-867-6101

Owner Comments Steve Huskey owns the largest portion of land where the proposed rock quarry and asaphalt plant are to be located (Padgett 2005).

Management Comments

Protection Comments This site has no formal protection and is part of a preposed rock quarry and asaphalt plant (Padgett 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
G07COL02NCUS	Cole, Brian. 2006. Biological Opinion for the Henrietta Quarry in Rutherford County (EO 229) and Its Effects on the Federally Endangered Dwarf-flowering heartleaf (Hexastylis naniflora). US Fish and Wildlife Service, Asheville Field Office, North Carolina.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
P07COL01NCUS	Cole, Brian. Field Supervisor, USFWS-Asheville. Letter dated 16 July 2007 regarding Section 7 formal consultation concerning Hexastylis naniflora at Henrietta Quarry, Rutherford County.

VERSION

Version Author Robinson **Version Date** 2016-04-15

Transcribed By Padgett **Transcription Date** 2005-10-25

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22332

EO Number 230 **Parent EO Number** 97

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Sandy Run/Cliffside Natural Area

Survey Site
Broad River: Sandy Run/Cliffside Natural Area (Sub EO of EO 097)

Directions Broad River: Sandy Run/Cliffside Natural Area. This is a sub EO of Parent EO 097 (Wichmann 2005). Sandy Run/Cliffside Natural Area: Concentrated about 0.5 mile further to the east of [sub EO 017], on intermittent tributary 2002.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2002-04-25

EO Rank Comment

EO Data Estimate of 50-100 plants on 25 April with hardwoods, Kalmia, Galax (Oakley 2002) [copied from EO 017 (Wichmann 2005)].

Source Feature Identifier 49056

Source Feature Locator Broad River: Sandy Run/Cliffside Natural Area

Source Feature Descriptor 2002; NCNHP

Surveyors Oakley **Survey Type** Qualitative ground survey

Survey Date 2002-04-25 **First Observation Date** 2002-04-25 **Last Observation Date** 2002-04-25

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Young-mature Mesic Mixed Hardwoods with heath on a moderate north-facing slope (Oakley 2002)

Min. Elevation 700 **feet** **Max. Elevation** 800 **feet**

EO Observed Area **acres**

Rep Accuracy Medium **Separation Comments** All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22332

EO Number 230 **Parent EO Number** 97

DOCUMENTATION

Reference Code	Citation
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.

VERSION

Version Author Amoroso **Version Date** 2015-10-08

Transcribed By Wichmann **Transcription Date** 2005-10-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22372

EO Number 231 **Parent EO Number** 232

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Buffalo Creek Rare Plant Site

Survey Site
Buffalo Creek Rare Plant Site, south (Sub EO of EO 232)
NCDOT B-2618

Directions Buffalo Creek Rare Plant Site, south: Along the East and West sides of Buffalo Creek, south of SR 1908 (Wichmann 2005, based on maps).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2012-03-16

EO Rank Comment

EO Data **2012:** Wagner et. al. counted 20 plants on 16 March 2012 (Wagner 2012).
2000: Site re-surveyed by Gaddy on 18 May 2000, identification confirmed, no count given (Gaddy 2000).
1998: 15-22 plant located near the bridge; unknown number farther south on the west side of the river (Wichmann interpreting maps from Savidge 1998)

Source Feature Identifier 26304
Source Feature Locator Buffalo Creek Rare Plant Site, south of SR1908 bridge
Source Feature Descriptor 1998; NCDOT

Source Feature Identifier 30201
Source Feature Locator Buffalo Creek Rare Plant Site, next to SR1908 bridge
Source Feature Descriptor 1998; NCDOT

Surveyors Tim Savidge, NC DOT
L.L. Gaddy
Jackie Wagner, ASU

Survey Type Qualitative ground survey

Survey Date 2012-03-16 **First Observation Date** 1998-05-18 **Last Observation Date** 2012-03-16

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** "Large extensive area [includes EO 046] exact boundary should be mapped. See accompaning maps" (Savidge 1998).

DESCRIPTION

General Description

Min. Elevation 780 **feet** **Max. Elevation** 810 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22372

EO Number 231 **Parent EO Number** 232

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics Associated with NC DOT project B-2618 (Wichmann 2005).

DOCUMENTATION

Reference Code	Citation
P00GAD01NCUS	Gaddy, L.L. 2000. Letter regarding endangered species [Hexastylis naniflora, Sagittaria fasciculata] resurvey/Oconee Nuclear Statuion Relicensing/Rights-of-way.
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author Amoroso **Version Date** 2015-10-21

Transcribed By Wichmann **Transcription Date** 2005-11-08

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22373
EO Number 232

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Waco

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Buffalo Creek Rare Plant Site

Survey Site
Buffalo Creek Rare Plant Site north and south of SR 1908 (parent EO of 046 and 231)

Directions Buffalo Creek Rare Plant Site: north and south of SR 1908. This is a parent EO of 046 and 231 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2005-04
EO Rank Comment
EO Data This is a parent EO of two sub EOs: 046 and 231 (Wichmann 2005). See each sub EO for detailed data.

Source Feature Identifier 30202
Source Feature Locator Buffalo Creek Rare Plant Site: north and south of SR 1908
Source Feature Descriptor Parent EO 232

Surveyors **Survey Type**
Survey Date 2012-03-16 **First Observation Date** 1998-05-18 **Last Observation Date** 2012-03-16
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area 2.50 **acres**
Rep Accuracy Medium **Separation Comments** Parent EO 232 consists of sub occurrences along Buffalo Creek above Kings Mountain Lake. Parent EOs 214, 216, and 232 occur in an arc along Kings Mountain Lake and its tributaries, and are located within 2 km of each other in a landscape dissected by roads and scattered development. EO 85 occurs 2.1 km to the north; sub EO28 of Parent EO 216 occurs along Long Creek and is separated by 2.6 km as measured along suitable riparian habitat and by 1.6 km straight line across unsuitable habitat (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22373

EO Number 232

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
P00GAD01NCUS	Gaddy, L.L. 2000. Letter regarding endangered species [Hexastylis naniflora, Sagittaria fasciculata] resurvey/Oconee Nuclear Statuion Relicensing/Rights-of-way.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author Robinson **Version Date** 2016-01-12

Transcribed By Wichmann **Transcription Date** 2005-11-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22381

EO Number 233 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River: Jolly Branch (Sub EO of EO 100).
NCDOT TIP: R-2824
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River: Jolly Branch. NC DOT Broad River Tract Sites: Q,R,S,T,U,W,X, and Z. James Padgett's 2001 Sites: R,S,T,U,V,W,X,Y, and Z. This is a sub EO of Parent EO 100 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2012-04-01

EO Rank Comment

EO Data **2012:** 2326 plants counted in populations Q, R, S, T, U, W, X, Y, and Z by NCDOT biologists 28, 29 March to 1 April 2012 (Bassette 2015).**2012**: Wagner et al. counted 40 plants on 3 March 2012. Few scattered small plants. Almost no larger plants. None in full bloom. Nice site except for moderate erosion and ice storm damage. (Wagner 2012).**2008:** 1,758 plants counted by NCDOT biologists in April 2008 (Bassette 2009).**2001:** 1,698 plants observed by NC DOT in 2001 (Bassette 2003).

Source Feature Identifier 30236
Source Feature Locator Broad River Tract, Jolly Branch Site R, Site X
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30238
Source Feature Locator Broad River Tract, Jolly Branch Site S, Site Y
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30239
Source Feature Locator Broad River Tract, Jolly Branch Site T, Site Z
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30240
Source Feature Locator Broad River Tract, Jolly Branch Site Y, Site S
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30241
Source Feature Locator Broad River Tract Site T, Jolly Branch Site U
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30242
Source Feature Locator Broad River Tract SIte U, Jolly Branch Site V
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30243
Source Feature Locator Broad River Tract Site W, Jolly Branch Site W
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30244
Source Feature Locator Broad River Tract Site R, Jolly Branch Site X
Source Feature Descriptor 2003; NCDOT Contractor

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22381

EO Number 233 **Parent EO Number** 100

Source Feature Identifier 30245
Source Feature Locator Broad River tract Site Q, Jolly Branch Site Z
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 89557
Source Feature Locator Broad River Greenway Conservation Area, Site S
Source Feature Descriptor 2012: NCDOT Contractor

Source Feature Identifier 89558
Source Feature Locator Broad River Greenway Conservation Area, Site X
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89559
Source Feature Locator Broad River Greenway Conservation Area, site JJ
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89560
Source Feature Locator Broad River Greenway Conservation Area, Site Y
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89561
Source Feature Locator Broad River Greenway Conservation Area, Site Z
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89562
Source Feature Locator Broad River Greenway Conservation Area, Site T
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89563
Source Feature Locator Broad River Greenway Conservation Area, Site U
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89564
Source Feature Locator Broad River Greenway Conservation Area, Site W
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89565
Source Feature Locator Broad River Greenway Conservation Area, Site R
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89566
Source Feature Locator Broad River Greenway Conservation Area, Site Q
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89567
Source Feature Locator Broad River Greenway Conservation Area, Site HH
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors NC DOT Personnel
Jackie Wagner, ASU

Survey Type Qualitative ground survey

Survey Date 2012-04-01 **First Observation Date** 2001 **Last Observation Date** 2012-04-01

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22381

EO Number 233 **Parent EO Number** 100

DESCRIPTION

General Description Pine and Hardwoods (Bassette 2003).

Min. Elevation 700 **feet** **Max. Elevation** 800 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NC DOT	

Owner Comments Broad River Greenway?

Management Comments

Protection Comments Broad River Tract was purchased for Mitigation associated with the Shelby Bypass (Wichmann 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author Robinson **Version Date** 2017-06-08

Transcribed By Wichmann **Transcription Date** 2005-11-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22383

EO Number 235 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Tributary N of Broad River and SE of Lake Houser

Directions Broad River: Tributary north of the Broad River and south-east of Lake Houser.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2005-11-22

EO Rank Comment EO rank based on current EO Rank Specs (Padgett 2005).

EO Data Padgett estimated 100-200 plants along a small stream in 2001 (Padgett 2001).

Source Feature Identifier 30262

Source Feature Locator Broad River: Tributary north of the Broad River and south-east of Lake Houser; part of Parent EO 100

Source Feature Descriptor Padgett, 2001

Surveyors NC DOT Personel
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2001 **First Observation Date** 2001 **Last Observation Date** 2001

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak-Hickory Forest community. Associted with Liriodendron tulipifera, Quercus alba, Quercus coccinea, Oxydendrum arboreum, Cornus florida, Polystichium acrostichoides, Chimaphilla maculata, and Goodyera pubescens (Padgett 2001).

Min. Elevation 670 **feet** **Max. Elevation** 700 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments EO is within 2km of subEOs along Sandy Run and part of parent EO 100 (Robinson 2015).

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	Private	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22383

EO Number 235 **Parent EO Number** 100

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author Robinson **Version Date** 2015-10-15

Transcribed By Wichmann **Transcription Date** 2005-11-21

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22384

EO Number 236 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River: Sandy Run Creek, tributary west of creek and N of SR 1186 at bend in Creek (Sub EO of EO 100).

Directions A tributary from the west of Sandy Run Creek and north of SR 1186, at a large bend in Sandy Run Creek. This is a sub EO of Parent EO 100 (Wichmann 2005).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2005-11-22

EO Rank Comment EO Rank based on current EO Specs (Padgett 2005).

EO Data Estimated 150-300 plants growing on moderately steep to very steep north to northeast-facing slope observed by Padgett in 2001 (Padgett 2001)

Source Feature Identifier 30263

Source Feature Locator Sandy Run Creek, west side tributary

Source Feature Descriptor 2001; Padgett

Surveyors NCDOT officals
James Padget, ASU

Survey Type Qualitative ground survey

Survey Date 2001 **First Observation Date** 2001 **Last Observation Date** 2001

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic-Oak Hickory forest along Sandy Run Creek extending east and south-east from the creek up steep slopes and along stream corridors. Dominant species include Liriodendron tulipifera, Quercus alba, Quercus rubra, Acer rubrum, Oxydendrum arboreum, Nyssa sylvatica, Cornus florida, Polystichum acrostichoides, and Goodyera pubescens (Padgett 2001).

Min. Elevation 680 **feet** **Max. Elevation** 720 **feet**

EO Observed Area **acres**

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Lake Houser, Inc.	

Owner Comments

Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22384

EO Number 236 **Parent EO Number** 100

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author Amoroso **Version Date** 2015-09-28

Transcribed By Wichmann **Transcription Date** 2005-11-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22385
EO Number 237 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Middle Sandy Run CK, W bank, south of SR 1195 (Sub EO of EO 100).

Directions Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek, west bank, south of SR 1195. This is a sub EO of Parent EO 100 (Wichmann 2005).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2001?
EO Rank Comment
EO Data **2012:** This site was visited in March 2012 as part of a site visit with NCDOT, USFWS, and ASU. Estiamated 200+ plants along slopes (Padgett 2015).
-- No information, GIS data submitted by Padgett in November 2005 (Wichmann 2005).
1995: Data for this EO and EO 014 lumped together by Newberry; 20 clumps observed at both EOs in 1995 but heavy tree fall had made the area hard to survey (Newberry 1996).
1981: This occurrence and EO 014 observed by Gaddy in May 1981. This occurrence and EO 014 observed by Gaddy in May 1981. Data for this EO and EO 014 lumped together by Gaddy; nearly 200 clumps observed at both EOs (Gaddy 1981).

Source Feature Identifier 30264
Source Feature Locator Middle Sandy Run Creek, west bank
Source Feature Descriptor 2005; Padgett

Surveyors L.L. Gaddy
Gill Newberry

Survey Type

Survey Date 2012-03-15 **First Observation Date** 1981-05 **Last Observation Date** 2012-03-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Basic EO data needed (Wichmann 2005).

DESCRIPTION

General Description
Min. Elevation 650 **feet** **Max. Elevation** 710 **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22385

EO Number 237 **Parent EO Number** 100

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.

VERSION

Version Author	Amoroso	**Version Date**	2015-09-28
Transcribed By	Wichmann	**Transcription Date**	2005-11-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22386

EO Number 238 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Sandy Run CK, E tributary N of SR 1195, NC DOT sites C- J (Sub of 100).
NCDOT Broad River Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Sandy Run Creek, unnamed tributary east of Creek and North of SR 1195, NC DOT Broad River Tract sites C,D,E,F,G,H, and J. James Padgett's 2001 Site 9B. This is a sub EO of Principal EO 100 (Wichmann 2005).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2008-04

EO Rank Comment

EO Data 2012: 1865 plants counted by NCDOT biologists 2012 (Bassette 2015).
2008: 787 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2001-2003: 752 plants observed by NC DOT personnel from 2001-2003 (Bassette 2003).

Source Feature Identifier 28926
Source Feature Locator Broad River Tract, Site J
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30303
Source Feature Locator Broad River Tract, Site C
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30305
Source Feature Locator Broad River Tract, Site D
Source Feature Descriptor 2003; NCDOT contractor

Source Feature Identifier 30306
Source Feature Locator Broad River Tract, Site E
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30307
Source Feature Locator Broad River Tract, Site F
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 30308
Source Feature Locator Broad River Tract, Site G and H
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 89593
Source Feature Locator Broad River Greenway Conservation Area, Site C
Source Feature Descriptor 2012; NCDOT Contractor

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22386

EO Number 238 **Parent EO Number** 100

Source Feature Identifier 89594
Source Feature Locator Broad River Greenway Conservation Area, Site D
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89595
Source Feature Locator Broad River Greenway Conservation Area, Site E
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89596
Source Feature Locator Broad River Greenway Conservation Area, Site F
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89597
Source Feature Locator Broad River Greenway Conservation Area, Site G/H
Source Feature Descriptor 2012; NCDOT Contractor

Source Feature Identifier 89598
Source Feature Locator Broad River Greenway Conservation Area, Site J
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors NC DOT Personnel **Survey Type** Qualitative ground survey
Survey Date 2012-05-17 **First Observation Date** 2001-2003 **Last Observation Date** 2012-05-17
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Pine and hardwoods-Tulip poplar, oaks, maple (Bassette 2003).
Min. Elevation 680 **feet** **Max. Elevation** 810 **feet**
EO Observed Area 13.00 **acres**
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NC DOT	

Owner Comments
Management Comments
Protection Comments Part of NC DOT of Broad River Tract, mitigation site; see U03BAS01NCUS (Wichmann 2005).
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22386

EO Number 238 **Parent EO Number** 100

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-04-21

Transcribed By Wichmann **Transcription Date** 2005-11-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22387

EO Number 239 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Sandy Run Crk, tributary E of creek at first bend (Sub of 100).
NCDOT TIP: R-2824
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Sandy Run Creek, small unnamed tributary east of Sandy Run Creek where it first bends to the north-west. This is a Sub EO of Principal EO 100 (Wichmann 2005). James Padgett's 2001 Site K. NC DOT Broad River Tract Site EE (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2008-04

EO Rank Comment

EO Data 2012: 94 plants counted by NCDOT biologists on 28 March 2012 (Bassette 2015).
2008: 47 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2001: 39 plants over 0.18 acres observed by NCDOT biologists in 2001 (Bassette 2003).

Source Feature Identifier 30225
Source Feature Locator Broad River Tract, Sandy Run Creek Site EE
Source Feature Descriptor 2003; NCDOT Contractor

Source Feature Identifier 89581
Source Feature Locator Broad River Greenway Conservation Area, Site EE
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors NC DOT Personnel
Tim Bassette, NC DOT

Survey Type Quantitative ground survey

Survey Date 2012-03-28 **First Observation Date** 2001 **Last Observation Date** 2012-03-28

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Population EE is dominated by a Mesic Mixed Hardwood Forest (Piedmont Subtype) community on eastern side of Sandy Run Creek. A small steep sided drainage bisects the population area. Plants are located on southwest facing aspects. This low/mid
slope area is well stratified. Kalmia latifolia and Fagus grandiflora are the two dominant plants in this population. Medium quality habitat is present at this location.

Min. Elevation 650 **feet** **Max. Elevation** 700 **feet**

EO Observed Area 0.18 **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22387

EO Number 239 **Parent EO Number** 100

General Comments:

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Occurrence is contained within NC DOT mitigation site, the Broad River Tract; see reference U03BAS01NCUS (Wichmann 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-04-21

Transcribed By Wichmann **Transcription Date** 2005-11-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22394

EO Number 240 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Sandy Run Creek, at sharp bend south of SR 1194 (Sub of 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Sandy Run Creek, at sharp bend located south of SR 1194 and north of EO 073. See map for details. NCDOT Broad River Tract Site K. James Padgett's 2001 Site 9C. This is a Sub EO of Principal EO 100 (Wichmann 2005)

SURVEY INFORMATION

EO Rank F - Failed to find **EO Rank Date** 2008-04

EO Rank Comment

EO Data 2012: 21 plants counted during surveys by NCDOT biologists in May 2012 (Bassette 2015).
2008: No plants located during surveys by NCDOT biologists in April 2008 (Bassette 2009).
2001: 18 plants observed by NC DOT in 2001 (Bassette 2003). Less than 20 clumps seen (Padgett 2001).

Source Feature Identifier 30302
Source Feature Locator Broad River Tract, Site K
Source Feature Descriptor 2003; NCDOT contractor

Source Feature Identifier 89592
Source Feature Locator Broad River Greenway Conservation Area, Site K
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors NC DOT Personnel
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2012-05-17 **First Observation Date** 2001 **Last Observation Date** 2012-05-17

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Floodplain and Oak-hickory Forest communities along small unnamed tributary of Sandy Run Creeknear the conflunce. Carpinus caroliniana, Smilax ssp., Mitchella reppens, Polysticihium Acrostichoices, Quercus alba, Liriodendron tulipifera, Acer rubrum, and Oxydendrum arboreum (Padgett 2001).

Min. Elevation 680 **feet** **Max. Elevation** 680 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22394

EO Number 240 **Parent EO Number** 100

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NCDOT	

Owner Comments

Management Comments

Protection Comments Part of NC DOT Broad River Tract, mitigation purchase for the Shelby Bypass (Wichmann 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-04-15

Transcribed By Wichmann **Transcription Date** 2005-11-21

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22399

EO Number 241 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas: Middle Sandy Run Crk, N side of Creek, extending S from its confluence with Grog Creek (Sub EO of EO 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek, north side of Creek, extending south from its confluence with Grog Creek. NC DOT Broad River Tract Site P. James Padgett's 2001 Site 8. This is a sub EO of Parent EO 100 (Wichmann 2005). Occurrence extends south from the confluence of Grog Creek for about 450 meters.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2008-04

EO Rank Comment

EO Data 2012: 150 plants counted by NCDOT biologists on 3 April 2012 (Bassette 2015).
2009: Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009).
2009: 12 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2003: 46 plants observed by NC DOT personnel from 2001-2003 (Bassette 2003).

Source Feature Identifier 30221
Source Feature Locator Broad River Tract, Site P
Source Feature Descriptor Sub EO 149 of principal EO 100

Source Feature Identifier 89590
Source Feature Locator Broad River Greenway Conservation Area, Site P
Source Feature Descriptor 2012; NCDOT Contractor

Surveyors NC DOT Personnel **Survey Type** Qualitative ground survey

Survey Date 2012-04-03 **First Observation Date** 2001-2003 **Last Observation Date** 2012-04-03

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Red oak, red maple, tulip poplar (Bassette 2003).

Min. Elevation 680 **feet** **Max. Elevation** 680 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22399

EO Number 241 **Parent EO Number** 100

OWNERSHIP

Managed Areas Broad River Greenway
NC Division of Mitigation Services Easement
NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
State government	NC DOT	

Owner Comments "Ownership of the Broad River Tract will ultimately be conveyed to Cleveland County, with the Broad River Greenway Association acting as the County's steward to the property" (Bassette 2003).

Management Comments

Protection Comments Occurrence is within the NC DOT mitigation site, The Broad River Tract; see U03BAS01NCUS (Wichmann 2005).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.

VERSION

Version Author Amoroso **Version Date** 2016-04-21

Transcribed By Wichmann **Transcription Date** 2005-11-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22400
EO Number 242 **Parent EO Number** 243

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jacob Fork West Corridor

Survey Site
South Fork Catawba River: Jacob Fork, Unnamed Tributary near Catawba Wildlife Club [Jacob Fork East] (Sub EO of EO 243)

Directions South Fork Catawba River: Jacob Fork, unnamed tributary near Catawba Wildlife Club (Sub EO of Parent EO 243)

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-05
EO Rank Comment
EO Data **2005:** 4 individuals (Franklin et al. 2005).

Source Feature Identifier 28465
Source Feature Locator South Fork Catawba River: Jacob Fork, unnamed tributary
Source Feature Descriptor 2005; NCNHP

Surveyors Misty Franklin, NHP
Brenda Wichmann, NHP
James Padgett, NHP

Survey Type Quantitative ground survey

Survey Date 2005-05 **First Observation Date** 2005-05 **Last Observation Date** 2005-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description Poor quality site with old tires and other trash (Franklin et al. 2005).
Min. Elevation 1,110 **feet** **Max. Elevation** 1,100 **feet**
EO Observed Area **acres**
Rep Accuracy High

Separation Comments This sub EO is along the same tributary as EO 012 but is located outside the Jacob Fork West Corridor Natural Area and the Catawba Wildlife Club gate; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22400

EO Number 242 **Parent EO Number** 243

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-22
Transcribed By	Wichmann	**Transcription Date**	2005-11-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22401
EO Number 243

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jacob Fork West Corridor

Survey Site
South Fork Catawba River: Jacob Fork, Catawba Wildlife Club & Vicinity - Parent EO

Directions South Fork Catawba River: Jacob Fork, Catawba Wildlife Club. This is a parent EO of sub EOs: 012, 242, 269, 270. See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2007
EO Rank Comment Possibly not more than 500 plants in entire site based on dated information in subEO 012 (Robinson 2016)
EO Data This is a parent EO of sub EOs: 012, 242, 269, 270; see each sub EO for details.

Source Feature Identifier 49121
Source Feature Locator South Fork Catawba River: Jacob Fork, Catawba Wildlife Club
Source Feature Descriptor Parent EO 243

Surveyors **Survey Type**
Survey Date 2012-07 **First Observation Date** 1981-05 **Last Observation Date** 2012-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO 271 occurs 2.2 km to the east, and EO 243 occurs 2.2 km to the north; there are no direct hydrologic connections (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas Catawba County Wildlife Club Registered Heritage Area

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22401

EO Number 243

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
F85NHP01NCUS	NCNHP Staff, 1985 Field Survey.
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F06NHP01NCUS	Field survey form completed by a NHP staff member for 2006 field work and not associated with a report produced by the survey.
F12NHP01NCUS	NCNHP Staff, 2012 Field Survey
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.

VERSION

Version Author Robinson **Version Date** 2016-07-27

Transcribed By Wichmann **Transcription Date** 2005-11-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22403
EO Number 245

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Floyds Creek Tributary Rare Plant Site

Survey Site
Broad River: Floyds Creek Tributary Rare Plant Site (parent of 91, 113, and 175).

Directions Broad River: Floyds Creek Tributary Rare Plant Site. This is a parent EO of three Sub EOs: 91, 113, and 175 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2005-04
EO Rank Comment
EO Data This is a parent EO of two Sub EOs: 113 and 175. See each sub EO for detailed EO data.

Source Feature Identifier 39939
Source Feature Locator Broad River: Floyds Creek Tributary Rare Plant Site
Source Feature Descriptor Parent EO 245

Surveyors **Survey Type**
Survey Date 2010-01-27 **First Observation Date** 2003-05-15 **Last Observation Date** 2010-01-27
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent EO 99 occurs 1.6 km to the west along Richardson Creek and tributaries, and 1.8 km to the south along the Broad River; Parent EO 247 occurs 2.6 km to the north along tributaries to Floyds Creek (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22403

EO Number 245

Additional Topics

DOCUMENTATION

Reference Code	Citation
F03REN02NCUS	Renninger, Heather. 2003. Field Survey Form.
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

VERSION

Version Author Amoroso **Version Date** 2015-10-22

Transcribed By Wichmann **Transcription Date** 2005-12-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22414

EO Number 246 **Parent EO Number** 100

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River: Sandy Run Creek; west bank, 0.4 miles from confluence (Sub EO of EO 100)

Directions West bank of Sandy Run Creek, 0.4 miles from its confluence with the Broad River. This is a sub EO of Parent EO 100 (Wichmann 2005).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2005-11-22

EO Rank Comment EO Rank based on current EO Specs (Padgett 2005).

EO Data Less than 100 plants esitimated (Padgett 2001)

Source Feature Identifier 30361

Source Feature Locator Sandy Run Creek west bank

Source Feature Descriptor 2001; Padgett

Surveyors NCDOT officals
James Padgett, ASU

Survey Type Qualitative ground survey

Survey Date 2001 **First Observation Date** 2001 **Last Observation Date** 2001

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Alluvial forest community with Betula nigra, Liriodendron tulipifera, Quercus spp., Carya spp., Pinus spp., Polystichium acrostichoides, Mitchella repens, and Lonicera japonica (Padgett 2001).

Min. Elevation 625 **feet** **Max. Elevation** 635 **feet**

EO Observed Area **acres**

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Unknown	Private	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22414

EO Number 246 **Parent EO Number** 100

DOCUMENTATION

Reference Code	Citation
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author Padgett **Version Date** 2005-11-22

Transcribed By Wichmann **Transcription Date** 2005-11-21

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22415
EO Number 247

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South
Chesnee
Forest City

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name
New Bethel Rare Plant Site

Survey Site
Broad River: Floyds Creek near Harris: Parent EO

Directions Broad River: Floyds Creek near Harris. This is a parent EO of 9 sub EOs: 013, 056, 080, 106, 114, 115, 173, 174, and 286 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2015-04-23
EO Rank Comment EO rank is based on EO Rank Specs for this species and EO data for each sub EO, when taken together (Wichmann 2005).
EO Data Broad River: Floyds Creek near Harris. This is a parent EO; see each sub EO for detailed EO data.

Source Feature Identifier 53010
Source Feature Locator Broad River: Floyds Creek near Harris
Source Feature Descriptor Parent EO 247

Source Feature Identifier 53011
Source Feature Locator Tate Conservation Easement transplant plots
Source Feature Descriptor Parent EO 247 transplant plots

Surveyors
Survey Type
Survey Date 2015-04-23 **First Observation Date** 1977 **Last Observation Date** 2015-04-23
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 243 occurs 2.6 km to the south along tributaries to Floyds Creek; Parent EO 99 occurs 2 km to the south west along a tributary to Richardson Creek (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22415

EO Number 247

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F00CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F15DOT01NCUS	N.C. Department of Transportation. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory, NCDOT.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F05NHP02NCUS	NHP Staff, 2005 field survey.
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F08CON01NCUS	Contributed. 2008. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author Robinson **Version Date** 2016-07-27

Transcribed By Wichmann **Transcription Date** 2005-12-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22416
EO Number 248

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jonas Road Rare Plant Site

Survey Site
Broad River: McKinny Creek, Jebb Lamb Road Bridge and Jonas Road Rare Plant Site (parent of 040 and 054).

Directions Broad River: McKinny Creek, Jonas Road Rare Plant Site. This is a parent EO of two sub EOs: 040, 054 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2005-04-12
EO Rank Comment
EO Data This is a parent EO of two sub EOs: 040 and 054 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 29147
Source Feature Locator Broad River: McKinny Creek, Jonas Road Rare Plant Site
Source Feature Descriptor Parent EO 248

Surveyors **Survey Type**
Survey Date 2005-04-12 **First Observation Date** 1994-06 **Last Observation Date** 2005-04-12
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Parent EO 99 is 1.3 km to the north along tributary to Broad River (Amoroso 2105). All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22416

EO Number 248

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.

VERSION

Version Author Amoroso **Version Date** 2015-10-23

Transcribed By Wichmannn **Transcription Date** 2005-11-22

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22428

EO Number 249 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hensons Creek Natural Area

Survey Site
Broad River: Hensons Creek Natural Area, ravine 0.5 mile down-river from Big Island Bridge (Sub of 099).

Directions Broad River: Hensons Creek Natural Area, small ravine approximately 0.5 mile down-river from Big Island Bridge (SR 1106). This is a sub EO of parent EO 099 (Wichmann 2005). James Padgett's 2001 sub-populations C and D, see Map for details.

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2001-05-13

EO Rank Comment

EO Data **2001:** 3,000-5,000 estimated accross the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001).

Source Feature Identifier 28536
Source Feature Locator Broad River: Hensons Creek Natural Area, sub-occurrence C
Source Feature Descriptor 2005; Padgett

Source Feature Identifier 28537
Source Feature Locator Broad River: Hensons Creek Natural Area, sub-occurrence D
Source Feature Descriptor 2005; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey

Survey Date 2001-05-13 **First Observation Date** 2001-05-13 **Last Observation Date** 2001-05-13

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

DESCRIPTION

General Description Rich Cove Forest and Kalmia Bluff with Quercus spp, Carya spp, Fagus grandifolia, Cornus florida, Kalmia latifolia, Rhododendron sp, Hamamelis virginiana, Leucothoe sp, Polystichum acrostichoides, Osmunda sp, Toxicodendron radicans, and Parthenocissus quinquefolia. Some areas have been logged, but the coves have been untouched (Padgett 2001).

Min. Elevation 200 **feet** **Max. Elevation** 240 **feet**

EO Observed Area **acres**

Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22428

EO Number 249 **Parent EO Number** 99

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author	Amoroso	**Version Date**	2015-10-08
Transcribed By	Wichmann	**Transcription Date**	2005-12-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22429
EO Number 250 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hensons Creek Natural Area

Survey Site
Broad River: Hensons Creek Natural Area, ravine about 1.0 mile down from Big Island Bridge on the S side (sub of 099).

Directions Broad River: Hensons Creek Natural Area, ravine about 1.0 river mile down-river from Big Island Bridge (SR 1106) on the south side of the river, where it starts to turn east. This is a Sub EO of parent EO 099 (Wichmann 2005). James Padgett's 2001 sub-population E, see map for details.

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2001-05-13
EO Rank Comment
EO Data **2001:** 3-5,000 estimated across the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001).

Source Feature Identifier 28538
Source Feature Locator Broad River: Hensons Creek Natural Area sub-occurrence E
Source Feature Descriptor 2005: Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2001-05-13 **First Observation Date** 2001-05-13 **Last Observation Date** 2001-05-13
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

DESCRIPTION

General Description Rich Cove Forest and Kalmia Bluff with Quercus spp, Carya spp, Fagus grandifolia, Cornus florida, Kalmia latifolia, Rhododendron sp, Hamamelis virginiana, Leucothoe sp, Polystichum acrostichoides, Osmunda sp, Toxicodendron radicans, and Parthenocissus quinquefolia. Some areas have been logged, but the coves have been untouched (Padgett 2001).

Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres

Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22429

EO Number 250 **Parent EO Number** 99

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author	Amoroso	**Version Date**	2015-10-08
Transcribed By	Wichmann	**Transcription Date**	2005-12-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22430
EO Number 251 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Hensons Creek Natural Area

Survey Site
Broad River: Hensons Creek Natural Area, Big lsand Plantation (east) (Sub of 099).

Directions Broad River: Hensons Creek Natural Area, Big Island Plantation (east). This is a Sub EO of parent EO 099 (Wichmann 2005). Approximately 0.5 mile north of the Broad River, along the first unnamed tributary down-river from Big Island Bridge (SR 1106). James Padgett's 2001 sub-population A, see map for details.

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2001-05-13
EO Rank Comment
EO Data **2001:** 3-5,000 estimated in the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001).

Source Feature Identifier 28542
Source Feature Locator Broad River: Hensons Creek Natural Area, Big Island Plantation (east), sub-occurrence A
Source Feature Descriptor 2005; Padgett

Surveyors James Padgett, ASU **Survey Type** Qualitative ground survey
Survey Date 2001-05-13 **First Observation Date** 2001-05-13 **Last Observation Date** 2001-05-13
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

DESCRIPTION

General Description
Min. Elevation 200 **feet** **Max. Elevation** 240 **feet**
EO Observed Area 11.00 **acres**
Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22430

EO Number 251 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University

VERSION

Version Author Robinson **Version Date** 2015-11-18

Transcribed By Wichmann **Transcription Date** 2005-12-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22468
EO Number 252

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
South Fork Catawba River, Henry Fork, unnamed tributaries and US 321 (parent of 019 and 020).

Directions South Fork Catawba River, Henry Fork, unnamed tributaries and US 321. This is a parent EO of two Sub EOs: 019 and 020 (Wichmann 2005). See each sub EO for detailed directions.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2005-05-12
EO Rank Comment
EO Data This is a parent EO of two Sub EOs: 109 and 020 (Wichmann 2005). See each sub EO for detailed EO data.

Source Feature Identifier 49124
Source Feature Locator South Fork Catawba River, Henry Fork, unnamed tributaries and US 321
Source Feature Descriptor Parent EO 252

Surveyors **Survey Type**
Survey Date 2007 **First Observation Date** 1993-08-06 **Last Observation Date** 2007
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Principal EO of 019 and 20 which were not separated by an area of persistently unsuitable habitat at the time of discovery and are therefore linked by principal EO 252; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22468

EO Number 252

DOCUMENTATION

Reference Code	Citation
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
F05NHP02NCUS	NHP Staff, 2005 field survey.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.
P05HAR01NCUS	Harris, P. S. III. 2005. Letter regarding Hexastylis naniflora Inventory NCDOT TIP No. R-2824. 2pp.
U93CUR01NCUS	Currie, Robert R. 1993. Biological Opinion of the U.S. Fish and Wildlife Service concerning the effects of the construction of US 321 in Catawba County on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). 7pp.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.

VERSION

Version Author Robinson **Version Date** 2016-01-12

Transcribed By Wichmann **Transcription Date** 2005-12-06

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22491

EO Number 254 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, E bank of Hoyle Creek, East Burke High School Transplant Area (Sub EO of EO 178)

Directions Catawba River: Hoyle Crk-Micol Crk, east bank of Hoyle Creek located just south of Catawba River. This is the "upland" relocation site referred to by Boaze (2008). This is a sub EO of Parent EO 178.

SURVEY INFORMATION

EO Rank D? - Possibly poor estimated viability **EO Rank Date** 2010-05-26

EO Rank Comment Appears area surrounding occurrence was disturbed in the past, based on 1998 aerial photos. This assumption was used in assigning the rank. Because a description of habitat was not reported, the rank should be refined as additional information becomes available. Rank specs followed: less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Data **Monitoring data - 2010:** Total of 168+ plants: 44 resident (37 alive with leaves + 7 alive without leaves) and 124 relocated (87 alive + 37 alive without leaves) plants observed at this site by Boaze on 26 May 2010. Many unflagged plants were also present (Boaze 2010).

2009: Total of 173+ plants: 48 resident (42 alive with leaves + 6 alive without leaves) and 125 relocated (97 alive + 28 alive without leaves) plants observed at this site by Boaze on 01 June 2009. Eight of the relocated plants appeared to have reproduced with rhizomes; many unflagged plants were also present (Boaze 2009).

2008: Total of 174 plants: 49 resident (44 alive + 5 alive without leaves) and 125 relocated (108 alive + 17 alive without leaves) plants observed at this site by Boaze in May 2008. No flowers present (Boaze 2008).

2007: 52 resident plants observed at this site by Boaze in May 2007 [no report on the number of relocated plants still alive] (Boaze 2008).

2006: Total of 190 plants: 59 resident and 131 relocated plants observed at this site by Boaze in July 2006. No flowers present (Boaze 2008). A total of 515 plants, scattered between EOs 254, 255, 256 [all located at the Burke County School Site] were located in the construction project area and were expected to be impacted by improvement activities. Of these, 286 were moved to a 6.1 acre protected area on-site in 2006 (Wells 2006 in G06WEL01NCUS). 186 plants observed by Boaze in June 2006 (Boaze, 2006) [C. Wells, FWS copy of Management Plan.]

Source Feature Identifier 30546

Source Feature Locator Hoyle Crk-Micol Crk, east bank of Hoyle Creek, upland relocation site

Source Feature Descriptor 2005; USFWS

Surveyors Pam Boaze, Fish and Wildlife Associates, Inc. **Survey Type**

Survey Date 2010-05-26 **First Observation Date** 2006-06 **Last Observation Date** 2010-05-26

Data Sensitive Element N **Comments**

Monitoring Needs Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System. Fish and Wildlife Associates are to monitor first two of five years, and train representative from School System to monitor consistent with their methods in years 3-5. [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22491

EO Number 254 **Parent EO Number** 178

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High

Separation Comments Located west of EOs: 255 and 256; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments Owned by the County (Burke County School System).

Management Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System, which is the entity charged with future management requirements at this site. Fish and Wildlife Associates Has produced a management plan for this site, persuant to the USFWS consultation which authorized impacts in this area. NC NHP was to receive a copy of this management plan [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Protection Comments Plants are located within a permanent conservation easement (Boaze 2008).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.
U10BOA01NCUS	Boaze, Pam. 2010. Monitoring report year-4: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.
U09BOA01NCUS	Boaze, Pam. 2009. Monitoring report year-3: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.

VERSION

Version Author Amoroso **Version Date** 2015-10-15

Transcribed By Wichmann **Transcription Date** 2005-12-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22492

EO Number 255 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, ravine E of Hoyle Crk, East Burke High School (Sub EO of EO 178)

Directions Catawba River: Hoyle Crk-Micol Crk, ravine east of Hoyle Creek, drains into a tributary to the Catawba River. This is a sub EO of Parent EO 178. [Note: it is unclear in Boaze (2008) whether this is considered part of the riparian relocation area represented by EO 256. NHP assumed it was not when these occurrences were mapped because a separate plant count was provided with the shapefiles].

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2006-06

EO Rank Comment Appears area surrounding occurrence was disturbed in the past, based on 1998 aerial photos. This assumption was used in assigning the rank. Because a description of habitat was not reported, the rank should be refined as additional information becomes available. Rank specs followed: less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Data **2006:** A total of 515 plants, scattered between EOs 254, 255, 256 [all located at the Burke County School Site] were located in the construction project area and were expected to be impacted by improvement activities. Of these, 286 were moved to a 6.1 acre protected area on-site in 2006 (Wells 2006 in G06WEL01NCUS). 155 plants observed in June 2006 (Boaze, 2006) [C. Wells, FWS copy of Management Plan.]

Source Feature Identifier 30547

Source Feature Locator Hoyle Crk-Micol Crk, ravine east of Hoyle Creek, drains into a tributary to the Catawba River

Source Feature Descriptor 2005; USFWS

Surveyors **Survey Type**

Survey Date 2006-06 **First Observation Date** 2006-06 **Last Observation Date** 2006-06

Data Sensitive Element N **Comments**

Monitoring Needs Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System. Fish and Wildlife Associates are to monitor first two of five years, and train representative from School System to monitor consistent with their methods in years 3-5. [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High **Separation Comments** Located west of Sub EO 256 and north-east of EO 254; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22492

EO Number 255 **Parent EO Number** 178

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments Owned by the County (Burke County School System).

Management Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System, which is the entity charged with future management requirements at this site. Fish and Wildlife Associates Has produced a management plan for this site, persuant to the USFWS consultation which authorized impacts in this area. NC NHP was to receive a copy of this management plan [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Protection Comments Plants are located within a permanent conservation easement (Boaze 2008).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.

VERSION

Version Author Amoroso **Version Date** 2015-10-15

Transcribed By Wichmann **Transcription Date** 2005-12-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22493

EO Number 256 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, tributary E of Hoyle Crk, East Burke High School transplant area (Sub EO of EO 178)

Directions Catawba River: Hoyle Crk-Micol Crk, tributary east to Catawba River located just east of Hoyle Creek. This is a sub EO of Parent EO 178. This is the riparian relocation area referred to by Boaze (2008) [Note: it is unclear in Boaze (2008) whether EO 255 is considered part of the riparian relocation area. NHP assumed it was not when these occurrences were mapped because a separate plant count for that area was provided with the shapefiles].

SURVEY INFORMATION

EO Rank C? - Possibly fair estimated viability **EO Rank Date** 2010-05-26

EO Rank Comment Appears area surrounding occurrence was disturbed in the past, based on 1998 aerial photos. This assumption was used in assigning the rank. Because a description of habitat was not reported, the rank should be refined as additional information becomes available. Rank specs followed: 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Data **Monitoring data - 2010:** Total of 376 flagged plants: 227 resident (193 alive + 34 alive without leaves) and 149 relocated (116 alive + 33 alive without leaves) plants observed at this site by Boaze on 26 May 2010. A considerable number of unflagged/not monitored plants are present in this area (Boaze 2010).
2009: Monitoring data - Total of 341 plants: 191 resident (161 alive + 30 alive without leaves) and 150 relocated (126 alive + 24 alive without leaves) plants observed at this site by Boaze on 01 June 2009. A considerable number of unflagged/not monitored plants are present in this area (Boaze 2009). **2008:** Monitoring data - Total of 379 plants: 229 resident (207 alive + 22 alive without leaves) and 150 relocated (128 alive + 22 alive without leaves) plants observed at this site by Boaze in May 2008. No flowers present (Boaze 2008).
2006: Total of 415 plants: 265 resident and 150 relocated plants observed at this site by Boaze in July 2006. No flowers present (Boaze 2008). A total of 515 plants, scattered between EOs 254, 255, 256 [all located at the Burke County School Site] were located in the construction project area and were expected to be impacted by improvement activities. Of these, 286 were moved to a 6.1 acre protected area on-site in 2006 (Wells 2006 in G06WEL01NCUS). 210 plants observed in June 2006 (Boaze, 2006) [C. Wells, FWS copy of Management Plan].

Source Feature Identifier 30548

Source Feature Locator Hoyle Crk-Micol Crk, tributary just east of Hoyle Creek, riparian relocation site

Source Feature Descriptor 2005; USFWS

Surveyors Pam Boaze, Fish and Wildlife Associates, Inc. **Survey Type**

Survey Date 2010-05-26 **First Observation Date** 2006-06 **Last Observation Date** 2010-05-26

Data Sensitive Element N **Comments**

Monitoring Needs Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System. Fish and Wildlife Associates are to monitor first two of five years, and train representative from School System to monitor consistent with their methods in years 3-5. [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments**

DESCRIPTION

General Description

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 22493

EO Number 256 **Parent EO Number** 178

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High

Separation Comments Located east of Sub EO 254 and Sub EO 255; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

General Comments: There seem to be two species of Hexastylis present at this site, based on leaf appearance; however, positive identification has not been possible because the plants have not flowered during the monitoring years (Boaze 2008).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments Owned by the County (Burke County School System).

Management Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System, which is the entity charged with future management requirements at this site. Fish and Wildlife Associates Has produced a management plan for this site, persuant to the USFWS consultation which authorized impacts in this area. NC NHP was to receive a copy of this management plan [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Protection Comments Plants are located within a permanent conservation easement (Boaze 2008).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U09BOA01NCUS	Boaze, Pam. 2009. Monitoring report year-3: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.
U10BOA01NCUS	Boaze, Pam. 2010. Monitoring report year-4: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.

VERSION

Version Author Amoroso **Version Date** 2015-10-15

Transcribed By Wichmann **Transcription Date** 2005-12-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24132

EO Number 258 **Parent EO Number** 261

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 05 (Sub EO of EO 261)

Directions Lincolnton-Lincoln County Airport: Sub EO of Parent EO 261. Near displaced threshold area of Runway 05 (southwest end of runway). The occurrence is to the west of the end of Runway 05 and west of Airport Road (SR 1750), in a wooded area approximately 0.10 miles from end of the runway pavement and extends west. The occurrences are in 'Study Area 2' of Figure 1 on page 12 of the 2006 Biological Opinion (Cole, 2006; Wells, 2006).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2006-06-15

EO Rank Comment Rank specs followed: more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Data **2006:** Daves reported that on 18 and 19 October 2006 the 675 plants to be impacted were moved to the Rhyne Conservation Preserve [see EO 260] (Daves 2006). Wells observed the groups of plants in the Action Area on 15 June 2006; no data reported (Wells 2006). 1,246 individual plants, in 7 groups [Group A: 20 plants, Group B: 50 plants, Group C: 61 plants, Group D: 126 plants, Group E: 243 plants, Group F: 343 plants, Group G: 403 plants], were observed in March and April 2006 by S&ME staff within the "Action Area", also referred to as "Study Area 2". Of these, 675 plants are within the footprint of proposed the clearing and grubbing activities, which include all of groups A, B, and C and a portion of groups D, E, and F [see map in Wells (2006) G06WEL02NCUS]. These plants are expected to be moved to Rhyne Conservation area (Wells 2006 in G06WEL02NCUS, Daves 2006).

2005: Daves, McRae, and Beckstrom first observed the occurrence in October and November 2005 (Cole 2006, Wells 2006).

Source Feature Identifier 34172
Source Feature Locator Group G, Lincolnton-Lincoln County Airport
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34173
Source Feature Locator Group E and F (combined), Lincolnton-Lincoln County Airport
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34174
Source Feature Locator Group D, Lincolnton-Lincoln County Airport
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34175
Source Feature Locator Group C, Lincolnton-Lincoln County Airport
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34176
Source Feature Locator Group B, Lincolnton-Lincoln County Airport
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34177
Source Feature Locator Group A, Lincolnton-Lincoln County Airport
Source Feature Descriptor 2006; S&ME

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24132

EO Number 258 **Parent EO Number** 261

Surveyors Lisa Beckstrom, S&ME Inc., 2006
Carolyn Wells, USFWS, 2006
Chris Daves, S&ME Inc., 2006
Catherine McRae, S&ME Inc., 2006

Survey Type Qualitative ground survey

Survey Date 2006-06-15 **First Observation Date** 2005-10 **Last Observation Date** 2006-06-15

Data Sensitive Element N **Comments**

Monitoring Needs Comments Monitoring of the individuals in the Action Area.

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private organization	Lincolnton-Lincoln County Airport	

Owner Comments

Management Comments Following the removal of the trees and shrubs, the ceared areas are to be maintained ans grassed fields, rendering the habitat unsuitable for Hexastylis naniflora (Wells 2006).

Protection Comments These plants do not occur in an area that is currently protected. The Airport is proposing to relocation the affected plants only to an off-site conservation area (Rhyne Conservation Area; 15 miles to the southwest of the Airport), where a conservation easement is currently held by Catawba Lands Conservancy (Wells 2006).

Additional Topics Indirect effects to the remaining plants include increased sunlight to the plants in areas adjacent to areas that are cleared and grubbed. This is expected to result in altered habitat conditions at the immediate edge of the tree line, making the area less hospitable to this species. Construction and maintenance of the existing Airport approach has also resulted in an influx of invasive species, which will likely result in additional loss of plants (Wells 2006).

DOCUMENTATION

Reference Code	Citation
P06DAV01NCUS	Daves, Chris. Natural Resources Project Manager, S&ME Inc. Email to Suzanne Mason dated 23 October 2006 Re: Hexa nani at Lincolnton County Airport.
G06WEL02NCUS	Wells, Carolyn. USFWS-Asheville Field Office. Biological Opinion on the proposed obstruction-removal activities on Runway 05 of the Lincolnton-Lincoln County Regional Airport, 04 October 2006.
P06COL01NCUS	Cole, Brian. Field Supervisor, USFWS-Asheville. Letter dated 15 September 2006 requesting Section 7 formal consultation concerning Hexastylis naniflora at Lincolnton-Lincoln County Airport.
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.

VERSION

Version Author Mason **Version Date** 2006-10-12

Transcribed By Mason **Transcription Date** 2006-09-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24198

EO Number 259 **Parent EO Number** 261

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 23 (Sub EO of EO 261)

Directions Lincolnton-Lincoln County Airport, Runway 23: Sub EO of Parent EO 261. At the end of Runway 23 (the northeast end of the runway) and along Lick Run, to the south and southeast of the end of the runway. The occurrences are in 'Study Area 3' and 'Study Area 4' of Figure 1 on page 12 of the 2006 Biological Opinion (Cole, 2006; Wells, 2006).

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2005-10

EO Rank Comment Rank specs followed: more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Data **2005:** Approximately 6,461 plants, in 5 groups [Group H: 2812 plants, Group I: 2278 plants, Group J: 19 plants, Group K: 156 plants, Group L: 726 plants], were observed in "Study Area 3" and "Study Area 4" by S&ME staff (Daves 2006; Wells 2006). Daves, McRae, and Beckstrom first observed the occurrence in October and November 2005 (Cole 2006, Wells 2006).

Source Feature Identifier 34178
Source Feature Locator Group H, Lincolnton-Lincoln County Airport, Runway 23
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34179
Source Feature Locator Group K, Lincolnton-Lincoln County Airport, Runway 23
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34180
Source Feature Locator Group L, Lincolnton-Lincoln County Airport, Runway 23
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34181
Source Feature Locator Group I, Lincolnton-Lincoln County Airport, Runway 23
Source Feature Descriptor 2006; S&ME

Source Feature Identifier 34182
Source Feature Locator Group J, Lincolnton-Lincoln County Airport, Runway 23
Source Feature Descriptor 2006; S&ME

Surveyors Chris Daves, S&ME Inc., 2006
Catherine McRae, S&ME Inc., 2006
Lisa Beckstrom, S&ME Inc., 2006

Survey Type Qualitative ground survey

Survey Date 2005-10 **First Observation Date** 2005-10 **Last Observation Date** 2005-10

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24198

EO Number 259 **Parent EO Number** 261

DESCRIPTION

General Description

Min. Elevation **feet** **Max. Elevation** **feet**

EO Observed Area **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Local government	Lincolnton-Lincoln County Airport	2012 permission denied

Owner Comments

Management Comments

Protection Comments These plants do not occur in an area that is currently protected.

Additional Topics

DOCUMENTATION

Reference Code	Citation
G06WEL02NCUS	Wells, Carolyn. USFWS-Asheville Field Office. Biological Opinion on the proposed obstruction-removal activities on Runway 05 of the Lincolnton-Lincoln County Regional Airport, 04 October 2006.
P06DAV01NCUS	Daves, Chris. Natural Resources Project Manager, S&ME Inc. Email to Suzanne Mason dated 23 October 2006 Re: Hexa nani at Lincolnton County Airport.
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.

VERSION

Version Author Amoroso **Version Date** 2016-03-22

Transcribed By Mason **Transcription Date** 2006-10-23

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24206
EO Number 261

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Leepers Creek Heartleaf Site

Survey Site
Lincoln-Lincoln County Airport and Leepers Creek (parent EO of Sub EOs 258, 259, 263)

Directions Lincoln-Lincoln County Airport and Leepers Creek: parent EO of Sub EOs 258, 259, & 263. See each sub EO for details.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2006-06-15
EO Rank Comment Rank specs followed: more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.
EO Data See each sub EO of additional details.

Source Feature Identifier 73503
Source Feature Locator Lincoln-Lincoln County Airport and Leepers Creek
Source Feature Descriptor Parent EO 261

Surveyors
Survey Type
Survey Date 2006-06-15 **First Observation Date** 2005-10 **Last Observation Date** 2006-06-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24206

EO Number 261

DOCUMENTATION

Reference Code	Citation
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.
G06WEL02NCUS	Wells, Carolyn. USFWS-Asheville Field Office. Biological Opinion on the proposed obstruction-removal activities on Runway 05 of the Lincolnton-Lincoln County Regional Airport, 04 October 2006.
P06COL01NCUS	Cole, Brian. Field Supervisor, USFWS-Asheville. Letter dated 15 September 2006 requesting Section 7 formal consultation concerning Hexastylis naniflora at Lincolnton-Lincoln County Airport.
P06DAV01NCUS	Daves, Chris. Natural Resources Project Manager, S&ME Inc. Email to Suzanne Mason dated 23 October 2006 Re: Hexa nani at Lincolnton County Airport.
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.

VERSION

Version Author Robinson **Version Date** 2016-01-12

Transcribed By Mason **Transcription Date** 2006-10-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24218

EO Number 262 **Parent EO Number** 302

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East
Lincolnton West

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Rhyne Conservation Preserve

Survey Site
South Fork Catawba River, Rhyne Conservation Preserve (Sub EO of EO 302)
Rhyne Preserve Transplants
USFWS Flex Fund Monitoring Site 1

Directions South Fork Catawba River, Rhyne Conservation Preserve: Five locations along the South Fork Catawba River and surrounding Southside N.C., on north-facing slope just south of an unnamed tributary of the South Fork Catawba River.
Location 1: North of a sharp right angle curve in the South Fork Catawba River and north of South Fork Road (SR 1248), within drainages approximately 0.1 mile north of the River.
Location 2: West of the South Fork Catawba River, along north facing slopes immediately south of South Fork Road (SR 1248).
Location 3: Small patch immediately northeast of the bridge of South Fork Road, east of the South Fork Catawba River.
Location 4: East of South Fork Catawba River and along drainages immediately east of South Fork Road (SR 1248).
Location 5: "South of abandoned mill, just south of Charlottes Lane; park at gate walk on paved road toward old mill (right fork). Then turn down old unpaved road bed (RR tracks on topo map). Cross stream on old bridge, plant occur on north facing slope east of bridge and west of the dam" (Franklin and Wichmann 2005), and extending upstream along the south side of the unnamed tributary approximatly 0.35 miles.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-05-05

EO Rank Comment Rank is based on all known locations (2016). >10,000 plants estimated to occur across all locations (2016). Rank specs followed: more than 500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest. The high rank of this EO is based on the transplanted population (Mason 2006).

EO Data **2016**: 1,329 plants counted by Bloom on 5 May 2016 in 1.5 acres of monitoring plots. Estimated 19,873 total plants across 22.43 acres (Bloom 2016).

2015: 1,543 plants counted by Padgett and Feldman on 19 May 2015 in 1.5 acres of monitoring plots. Estimated 22,847 total plants covering the entire 22.21 acres (all 5 locations) (Padgett and Feldman 2015).

2014: 1,690 plants counted on 29 May 2014 in 1.5 acres of monitoring plots. Estimated 25,000 total plants covering the entire 22.21 acres (all 5 locations) (Padgett 2014).

2013: 1,492 plants counted from three permanent monitoring plots with the population. Population mapped to be 22.21 acres total with an estimated 22,000+ plants on the site on 19 July 2013 (Padgett 2013).

2012: 1,378 plants counted from three permanent plots for estimate of 20,404 plants scattered across 22.21 acres within the whole site on 18 July 2012 (Padgett 2012). Site remapped in May of 2012 (Padgett 2013).

2006: Daves reported that 675 plants were moved from the Lincolnton-Lincoln County Airport to a plot within the Rhyne Preserve on 18 and 19 October 2006 (Daves 2006). Reintroduction plot is a separate source feature within Location 5, south of the unnamed Tributary, east of the South Fork River (Robinson 2014).

2005: Estimate 70-100; 59 plants counted, 5 flowering 11 May 2005, along north facing slopes, south of an unnamed tributary to South Fork Catawba River (Location 5) (Franklin and Wichmann 2005).

2002: Present on 5 April 2000 (Matthews et al 2002).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24218

EO Number 262 **Parent EO Number** 302

Source Feature Identifier 34252
Source Feature Locator Rhyne Preserve introduced population
Source Feature Descriptor 2006; NCNHP

Source Feature Identifier 73454
Source Feature Locator Location 1, South Fork Catawba River, Rhyne Conservation Preserve
Source Feature Descriptor 2012; NCNHP

Source Feature Identifier 88448
Source Feature Locator Rhyne Preserve, EO 262 plots
Source Feature Descriptor Padgett EO 262 plots

Source Feature Identifier 88739
Source Feature Locator Location 2, South Fork Catawba River, Rhyne Conservation Preserve
Source Feature Descriptor 2012; NCNHP

Source Feature Identifier 88740
Source Feature Locator Location 3, South Fork Catawba River, Rhyne Conservation Preserve
Source Feature Descriptor 2012; NCNHP

Source Feature Identifier 88741
Source Feature Locator Location 4, South Fork Catawba River, Rhyne Conservation Preserve
Source Feature Descriptor 2012; NCNHP

Source Feature Identifier 88742
Source Feature Locator Location 5, South Fork Catawba River, Rhyne Conservation Preserve
Source Feature Descriptor 2012; NCNHP

Source Feature Identifier 89946
Source Feature Locator Rhyne Conservation Preserve
Source Feature Descriptor Bloom 2016

Surveyors Misty Franklin, NHP
Brenda Wichmann, NHP
J.T. Soule, HARP
L.R. Gaffney, HARP
C.A. McRae, HARP
Chris Daves, S&ME, 2006
S&ME staff
James Padgett, NHP
Laura Gadd, NHP
Kimberly Israel, NHP
Mike Schafale, NHP
Sean Bloom, CLC
Maxwell Feldman, NHP intern

Survey Type Qualitative ground survey

Survey Date 2016-05-05 **First Observation Date** 2000-04-05 **Last Observation Date** 2016-05-05

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments** The Hexastylis naniflora locations were mapped throughout the Rhyne Preserve using GPS data points collected in June of 2012 (Padgett 2012).

DESCRIPTION

General Description Chestnut Oak Forest (Dry Heath Subtype) and Piedmont Monadnock Forest (Typic Subtype) (Bloom 2016).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24218

EO Number 262 **Parent EO Number** 302

Min. Elevation feet **Max. Elevation** feet

EO Observed Area 19.31 **acres**

Rep Accuracy High

Separation Comments Sub EOs are within 2km of each other and are not separated by 1km of unsuitable habitat. The principal EO is greater than 3km from other conspecific principal EOs (Mason 2006).

General Comments: Observed threats: Public Access Trail (South Fork Rail Trail) allows the public access to a small population (Plot #2). Threat: High / Scope: Low / Immediacy: High (Bloom 2016).
In 2006 plants were transplanted to Location 5 from the Lincoln County airport population (see parent EO 261). Transplanted to a north-facing slope in natural habitat. Daves noted that the transplanted plants were moved to an area distinct from the naturally occurring population and could be monitored separately (pers. comm. to S. Mason, 10 October 2006). The transplant plot is indicated with a separate source feature within the EO.

OWNERSHIP

Managed Areas NC Clean Water Management Trust Fund Easement
Catawba Lands Conservancy Preserve
Catawba Lands Conservancy Easement

Owner Type	Owner Name	Notes
Private organization	Catwaba Land Conservancy	

Owner Comments Sean Bloom contacted for permission to survey.

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F05WIC01NCUS	Wichmann, B. 2005. Field notebook for field survey/site visits conducted by Brenda Wichmann in 2005.
F05FRA01NCUS	Franklin, M. A. 2005. Field notebook for site visits conducted in 2005.
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.
F06CON01NCUS	Contributed. 2006. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.

VERSION

Version Author Robinson **Version Date** 2016-07-26

Transcribed By Mason **Transcription Date** 2006-11-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24352

EO Number 263 **Parent EO Number** 261

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Leepers Creek Heartleaf Site

Survey Site
Leepers Creek Heartleaf Site, sub EO of 261 at Lincolnton Airport

Directions Leepers Creek Heartleaf Site is located west of Camp Creek Road where Leepers Creek and Lick Run converge, about 0.5 mile north of NC 73 in central Lincoln County. This is a sub EO of 261.

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2001-04-04

EO Rank Comment

EO Data **2000-2001:** In flower on April 4, 2001 (Matthews et al 2002).

Source Feature Identifier 34656
Source Feature Locator Leepers Creek
Source Feature Descriptor 2001; Matthews

Surveyors L.R. GAffney, HARP
G. Singletary
J.T. Soule, HARP

Survey Type Qualitative ground survey

Survey Date 2001-04-04 **First Observation Date** 2000-10-20 **Last Observation Date** 2001-04-04

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Forested stream corridor with Betula nigra, Pinus echinata, P. virginiana, Carya ovata, C. tomentosa, Liriodendron tulipifera, Carpinus caroliniana, Cornus floridana, Fagus grandifolia, Quercus alba, Morus rubra, Ilex ambigua, Cornus amomum, Chionanthus virginicus, Tilia sp, Corylus cornuta, Vaccinium sp., Bignonia capreolata, Smilax sp., Campsis radicans, Vitis sp., Dioscorea villosa, Epifagus virginiana, Galium sp., Desmonium sp., Elephantopus tomentosus, E. carolinianus, Impatiens capensis, Tipularia discolor, Lycopodium flabelliforme, Uniola latifolia, Chimaphila maculata, Polystichum acrostichoides, Asplenium platyneuron, Botrychium virgininanum and others.

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy Medium

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	G. Singletary	

Owner Comments

Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24352

EO Number 263 **Parent EO Number** 261

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.

Specimen

Herb.UNCC Hexastylis naniflora, Soule, Gaffney & Singletary s n., 4 April 2001.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-26
Transcribed By	Amoroso	**Transcription Date**	2006-12-11

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24369
EO Number 264

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Maiden

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Carpenter Creek Heartleaf Site

Survey Site
Carpenter Creek Heartleaf Site

Directions Carpenter Creek Heartleaf Site is located on the NW quadrant of the intersection of Bethel Church Road (SR 1282) and NC 321 in central Lincoln County, south of Carpenter Creek.

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2001-04-27
EO Rank Comment
EO Data Present (Matthews et al 2002).

Source Feature Identifier 34752
Source Feature Locator Carpenter Creek Heartleaf Site
Source Feature Descriptor 2001-04-27; Gaffney and Soule

Surveyors J.T. Soule, HARP
L.R. Gaffney, HARP
Survey Type Qualitative ground survey

Survey Date 2001-04-27 **First Observation Date** 2001-04-27 **Last Observation Date** 2001-04-27
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak Hickory Forest
Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** No other occurrences are within 2 kilometers.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	R. Hawkins	

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code	Citation
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24369

EO Number 264

VERSION

Version Author	Robinson	**Version Date**	2015-12-07
Transcribed By	Amoroso	**Transcription Date**	2006-12-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24370
EO Number 265

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Reepsville

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
June Bug Woods

Survey Site
June Bug Woods
Seagletown Woods

Directions June Bug Woods occurs between SR 1205 and SR 1215 along Tanyard Creek, approximately 1.5 miles SE of Bethel Church.

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2000-05-30
EO Rank Comment
EO Data Present (Matthews et al 2002).

Source Feature Identifier 34753
Source Feature Locator June Bug Woods
Source Feature Descriptor 2000-05-30; Gaffney and Soule

Surveyors J.T. Soule, HARP
L.R. Gaffney, HARP

Survey Type Qualitative ground survey

Survey Date 2000-05-30 **First Observation Date** 2000-05-30 **Last Observation Date** 2000-05-30
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak Hickory Forest.
Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments** No other occurrences within 2 kilometers of this population.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	E. Seagle	

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code	Citation
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24370

EO Number 265

VERSION

Version Author	Robinson	**Version Date**	2015-12-07
Transcribed By	Amoroso	**Transcription Date**	2006-12-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24371
EO Number 266

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Cherryville

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Indian Creek Slopes

Survey Site
Indian Creek Woods

Directions Indian Creek Slopes is located on the west side of Indian Creek south of NC HWY 27 and east of SR 1149.

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2001-05-31
EO Rank Comment
EO Data Present (Matthews et al 2002).

Source Feature Identifier 34754
Source Feature Locator Indian Creek Slopes
Source Feature Descriptor 2001-05-31; Soule, Gaffney, Wright

Surveyors J.T. Soule, HARP
L.R. Gaffney, HARP
G. Wright

Survey Type Qualitative ground survey

Survey Date 2001-05-31 **First Observation Date** 2001-05-31 **Last Observation Date** 2001-05-31
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic Mixed Hardwood Forest with a canopy including Quercus rubra, PInus virginiana, Nyssa sylvatica and Carya sp. The subcanopy includes Oxydendron arboreum, Acer rubrum, Cornus florida, Nussa sylvatica, and Juglans nigra. Shrubs include Rhododendron nudiflorum, Corylus americana, Xathorhiza simplicissima, Sassafras albidum, and Arundinaria gigantea. Herbs present include Arisaema triphyllum, Circaea lutetiana ssp. canadensis, Verbesina sp., Sanguinaria canadensis, Microstegium vimineum, Galium sp., Lycopodium flabelliforme, Medeola virginiana, and Silene virginica.

Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area **acres**
Rep Accuracy Medium **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	G.P. York	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24371

EO Number 266

DOCUMENTATION

Reference Code	Citation
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.

Specimen

Herb.UNCC Soule, Gaffney & Wright s n. 31 May 2001

VERSION

Version Author	Robinson	**Version Date**	2015-12-07
Transcribed By	Amoroso	**Transcription Date**	2006-12-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24748

EO Number 267 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Kudzu Farm

Directions Kudzu Farm: Located in southern Rutherford County approximately 1.5 miles west by west-southwest of Harris north of SR 1122 (Duncan Road) approximately 0.40 mile.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2008-03-20

EO Rank Comment

EO Data **2006:** Estimate 150-250 clumps along stream corridor and adjacent slopes (Padgett 2008).

Source Feature Identifier 36020

Source Feature Locator Kudzu Farm: North of SR 1122; northern-most area along tributary

Source Feature Descriptor 2006; Padgett

Surveyors James Padgett, NCNHP
Allen Ratzlaff, USFWS

Survey Type Qualitative ground survey

Survey Date 2006-07-06 **First Observation Date** 2006-07-06 **Last Observation Date** 2006-07-06

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak-Hickory Forest. Dominating canopy species are Quercus alba, Q. coccinea, Liriodendron tulipifera, and Acer rubrum. Understory of Cornus florida and Oxydendrum arboreum. Some Kalima latifolia in the shrub layer. Herbs are common with Hexastylis naniflora, Carex spp., Polystichum acrostichoides, Medeola virginana, Prenanthes serpentaria, and Coreopsis major present.

Min. Elevation 755 **feet** **Max. Elevation** 787 **feet**

EO Observed Area 0.34 **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Henry Edwards	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24748

EO Number 267 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.

VERSION

Version Author Robinson **Version Date** 2015-11-18

Transcribed By JEP **Transcription Date** 2008-03-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24749

EO Number 268 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville East

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Kudzu Farm

Directions Kudzu Farm: Located in southern Rutherford County approximately 1.5 miles west by west-southwest of Harris north of SR 1122 (Duncan Road) approximately .40 mile.

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2008-03-20

EO Rank Comment

EO Data **2006:** Padgett observed approximately 25-30 clumps occurring in a small localized area along a secondary tributary near the head-end of it on 06 July 2006 (Padgett 2008).

Source Feature Identifier 36021

Source Feature Locator Kudzu Farm: North of SR 1122; southwestern sub population

Source Feature Descriptor 2006; Padgett

Surveyors James Padgett, NCNHP
Allen Ratzlaff, USFWS

Survey Type Qualitative ground survey

Survey Date 2006-07-06 **First Observation Date** 2006-07-06 **Last Observation Date** 2006-07-06

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak-Hickory Forest. Dominating canopy species are Quercus abla, Q. coccinea, Liriodendron tulipifera, and Acer rubrum. Understory of Cornus florida and Oxydendrum arboreum. Some Kalima latifolia in the shrub layer. Herns are common with Hexastylis naniflora, Carex spp., Polystichum acrostichoides, Medeola virginana, Prenanthes serpentaria, and Coreopsis major present.

Min. Elevation 820 **feet** **Max. Elevation** 837 **feet**

EO Observed Area 0.26 **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Henry Edwards	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24749

EO Number 268 **Parent EO Number** 99

DOCUMENTATION

Reference Code	Citation
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.

VERSION

Version Author Robinson **Version Date** 2015-11-18

Transcribed By JEP **Transcription Date** 2008-03-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24776

EO Number 269 **Parent EO Number** 243

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jacob Fork West Corridor

Survey Site
South Fork Catawba River: Jacob Fork, Jacobs Fork West (Sub EO of EO 243)

Directions Jacob Fork West: Located in southwestern Catawba County 1.50 miles northwest of Banoak west of NC 10 betwen Lynn Mountain Road (SR1108) and Jacob Fork River. This is a sub EO of Parent EO 243.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2008-03-20

EO Rank Comment

EO Data **2006 and 2007:** 200+ clumps occurring over a .73 acre area along an unnamed stream that from away from Lynn Mountain Road, north towards the river observed by Padgett in 2006 and 2007.

Source Feature Identifier 36286

Source Feature Locator Jacob Fork West, TNC Conservation Easement

Source Feature Descriptor 2007; NCNHP

Surveyors James Padgett, NCNHP **Survey Type** Qualitative ground survey

Survey Date 2007 **First Observation Date** 2006 **Last Observation Date** 2007

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Along stream and slopes with Quercus alba, Liriodendron tulipifera, Kalmia latifolia, Vaccinium spp., Galax urceolata, and Tsuga canadensis.

Min. Elevation 1,000 **feet** **Max. Elevation** 1,030 **feet**

EO Observed Area 0.74 **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private organization	The nature Conservancy	
Private individual	Private	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24776

EO Number 269 **Parent EO Number** 243

DOCUMENTATION

Reference Code	Citation
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
F06NHP01NCUS	Field survey form completed by a NHP staff member for 2006 field work and not associated with a report produced by the survey.

VERSION

Version Author Amoroso **Version Date** 2015-10-22

Transcribed By JEP **Transcription Date** 2008-03-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24777

EO Number 270 **Parent EO Number** 243

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Jacob Fork West Corridor

Survey Site
South Fork Catawba River: Jacob Fork, Jacob Fork West (Sub EO of EO 243)

Directions Jacob Fork West: Located in southwestern Catawba County 1.50 miles northwest of Banoak west of NC 10 betwen Lynn Mountain Road (SR1108) and Jacob Fork River. This is a sub EO of Parent EO 243.

SURVEY INFORMATION

EO Rank C? - Possibly fair estimated viability **EO Rank Date** 2008-03-20

EO Rank Comment

EO Data **2012:** Area occupied delineated by Padgett in July 2012 as part of USFWS status survey (Padget 2012).
2006 and 2007: 75-100+ clumps along a stream head in an area just over and acre observed by Padgett in 2007 and 2006.

Source Feature Identifier 36287
Source Feature Locator Jacob Fork West, TNC Easement
Source Feature Descriptor 2007; NCNHP

Surveyors James Padgett, NCNHP **Survey Type** Qualitative ground survey

Survey Date 2012-07 **First Observation Date** 2006 **Last Observation Date** 2012-07

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Along stream and slopes with Quercus alba, Liriodendron tulipifera, Kalmia latifolia, Vaccinium spp., Galax urceolata, and Tsuga canadensis.

Min. Elevation 1,000 **feet** **Max. Elevation** 1,040 **feet**

EO Observed Area 1.30 **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private organization	The Nature Conservancy	

Owner Comments

Management Comments

Protection Comments

Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24777

EO Number 270 **Parent EO Number** 243

DOCUMENTATION

Reference Code	Citation
F12NHP01NCUS	NCNHP Staff, 2012 Field Survey
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F06NHP02NCUS	NHP Staff, 2006 Field survey.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-22
Transcribed By	JEP	**Transcription Date**	2008-03-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24778
EO Number 271

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Banoak

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Pott Creek

Directions Pott Creek: Located in southwestern Catawba County east of NC 10, 1.80 miles northeast of Banoak and 1.10 miles east of the Jacobs Fork River.

SURVEY INFORMATION

EO Rank C? - Possibly fair estimated viability **EO Rank Date** 2012-03-16
EO Rank Comment Rank not give as an A due to condition of the natural community(Padgett 2008).
EO Data Only 5-6 plants seen by Wagner et al. on 16 March 2012. Might be many more across property line but no landowner permission. None of plants with buds or blooms (Wagner 2012). 700-1000 clumps along Pott Creek and its tributaries (Padgett 2008).

Source Feature Identifier 36288
Source Feature Locator Pott Creek tributaries
Source Feature Descriptor Padgett, 2008

Surveyors James Padgett, NCNHP
Jackie Wagner, ASU

Survey Type Qualitative ground survey

Survey Date 2012-03-16 **First Observation Date** 2008 **Last Observation Date** 2012-03-16
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mature forests. There are lots of Liriodendron tulipifera coming up in the mix, with Quercus alba, Q. rubra, Q. coccinea, Carya alba, and Carya glabra. Acer rubrum and Oxydendrum arboreum are common. Shrubs are abundent along the steep slopes of the streams with Kalmia latifolia very common. Herbs are sparse due to the thick regrowth of canopy species. Galax, Chimaphilia maculata and Hypoxis hirsuta are common (Padgett 2008).
Min. Elevation 970 **feet** **Max. Elevation** 1,000 **feet**
EO Observed Area 8.99 **acres**
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private organization	The Nature Conservancy	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24778

EO Number 271

DOCUMENTATION

Reference Code	Citation
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
F08NHP01NCUS	NCNHP Staff, 2008 field survey.

VERSION

Version Author	Robinson	**Version Date**	2015-10-14
Transcribed By	JEP	**Transcription Date**	2008-03-20

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24982
EO Number 272

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Polkville
Benn Knob

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
No Business Creek, Boyd Tract

Directions Located in northwestern Cleveland County, along tributaries to No Business Creek, 0.2 mi east of SR 1529 (Mt. Zion Church Road) and 0.2 mi north of SR1531 (Susan Road).

SURVEY INFORMATION

EO Rank BC - Good or fair estimated viability **EO Rank Date** 2007-04-20
EO Rank Comment
EO Data Padgett and Kota estimated 75-150 plants occuring along several small tributaries that flow west into No Business Creek on 20 April 2007 (Padgett 2007).

Source Feature Identifier 36966
Source Feature Locator Drainages that flow west into No Business Creek
Source Feature Descriptor 2007-04-20; Padgett and Kota

Surveyors James Padgett, NCNHP
Andrew Kota, FCNC

Survey Type Qualitative ground survey

Survey Date 2007-04-20 **First Observation Date** 2007-04-20 **Last Observation Date** 2007-04-20
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** Additional surveys may located additional occurences in the area.

DESCRIPTION

General Description Located in an area of maturing Dry-Mesic Oak-Hickory Forest surrounded by disturbed ares of development and sucessional old field pine stands. Dominant canopy species are Quercus alba, Q. rubra, Q. coccinea, and Liriodendron tulipifera. Understory species present include Oxydendrum arboreum, Cornus florida, Acer rubrum, Pinus spp., and Amelanchier arborea. Shrubs include scattered Kalmia latifolia and Eouymnous americanus. Herbs were failry diverse with the more common ones being Goodyera pubescens, Danthonia sp., Polysticum acrostichoides, Chimaphilia maculata, Mitchella repens, Solidago sp, and Hexastylis arifolia.

Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area 3.26 **acres**
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Boyd	

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 24982

EO Number 272

Additional Topics

DOCUMENTATION

Reference Code	Citation

VERSION

Version Author	Robinson	**Version Date**	2015-10-08
Transcribed By	JEP	**Transcription Date**	2007-09-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 25718

EO Number 273 **Parent EO Number** 316

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Northern Catawba County - Catawba River: Unnanmed tributary to Falling Creek (Sub EO of EO 316)

Directions Catawba River: Unnanmed tributary to Falling Creek: Unnamed tributary to Falling Creek, north of Hickory, Catawba County. On the property owner, Mr. Raymond von Drehle. Four patches occur on the south side of the UT on the north-facing slopes and the other two patches are on the north side of the UT in a small forested area adjacent to maintained lawn (Cole 2007).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2006-09

EO Rank Comment

EO Data 2006: 530 plants total found in six discrete patches on the property by E'nV biologists in September 2006; the Biological Assessment concluded the the impoundment would impact 130 plants (24% of the plants on the property) by construction of the pond and subsequent inundation; about 362 plants in 2.1 acres are expected to remain after the project is completed; a portion of the plants at the four patches on the south side of the tributary will be impacted by the project and none of the plants at the two patches on the north side will be impacted (Cole 2007).

Source Feature Identifier 39888

Source Feature Locator

Source Feature Descriptor Raymond van Drehle property

Surveyors **Survey Type** Qualitative ground survey

Survey Date 2006-09 **First Observation Date** 2006-09 **Last Observation Date** 2006-09

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed Y **Comments** This is EOR is based on the US Fish and Wildlife's Service's Biological Opinion (BA) document dated June 15, 2007 by Brian P. Cole [G07COL03NCUS] (Wichmann 2007).

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Management Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 25718

EO Number 273 **Parent EO Number** 316

Protection Comments The property owner proposed to preserve the remaining dwarf-flowered heartleafby placing a deed restriction on the site. The deed restriction will result in the preservation of 2.1 acres of dwarf-flowered heartleafhabitat and will protect about 362 individual dwarf-flowered heartleaf plants (Cole 2007).

Additional Topics

DOCUMENTATION

Reference Code	Citation
G07COL03NCUS	Cole, Brian. 2007. Biological Opinion for the construction of a 1 acre pond on an unmapped tributary to Falling Creek, north of Hickory, Catawba County and its effects on the federally threatened Dwarf-flowered heartleaf (Hexastylis naniflora). US Fish and Wildlife Service, Asheville Field Office, North Carolina.

VERSION

Version Author	Mason	**Version Date**	2015-11-02
Transcribed By	Wichmann	**Transcription Date**	2008-01-23

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 25900
EO Number 274

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs South

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Broad River/Sandy Run Natural Areas

Survey Site
Broad River/Sandy Run Natural Areas

Directions Broad River/Sandy Run Natural Areas: Broad River Greenway; Located 2 air miles south of Boiling Springs, NC and east NC Highway 150 on the north side of the Broad River approximately .70 mile downstream.

SURVEY INFORMATION

EO Rank A? - Possibly excellent estimated viability **EO Rank Date** 2008-03-24
EO Rank Comment The rank may be lowered or raised once the plants have been censused. 2012 data not counted towards EO rank because entire population may not have been censused (Robinson 2015).
EO Data Wagner et. al. counted 100 plants on 3 March 2012; there were a lot of buds but no plants in full bloom; many small H. naniflora plants (1-3 leaves) and few larger plants (Wagner 2012). Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009). Several hundred plants (may be upwards of 750-1000 plants) along stream corridors of unnamed stream and adjacent north-facing slopes. In flower and bud on 17 March 2008 (Padgett 2008).

Source Feature Identifier 44463
Source Feature Locator Broad River/Sandy Run Natural Areas: Broad River Greenway
Source Feature Descriptor 2008-03-17, Padgett

Surveyors James Padgett, NCNHP
Matt Jones, Garner-Webb Univ. undergrad
Jackie Wagner, ASU

Survey Type Qualitative ground survey

Survey Date 2012-03-03 **First Observation Date** 2008-03-17 **Last Observation Date** 2012-03-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Dry-Mesic Oak-Hickory Forest and Mesic Mixed Hardwoods. Canopy species are Quercus alba, Q. coccinea, Q. falcata, Carya glabra, C. alba, Liriodendron tulipifera, and Fagus grandifolia. The understory consists of Acer rubrum, Cornus florida, Oxydendrum, and Ilex opaca. Shrubs are common and thick in palces with Kalmia latifolia and Rhododendron maximum present. Other shrubs include Vaccinium spp., and Euoynmus maericanus. Vines are present as Smilax spp., and Begnonia caprolata. Herbs include Hexastylis naniflora, Chimaphilia maculata, Galax urecolata, Hepatica maculata, and Mitchella repens.

Min. Elevation 640 **feet** **Max. Elevation** 710 **feet**
EO Observed Area 7.30 **acres**
Rep Accuracy High **Separation Comments**
General Comments: NCPCP issued permit ID #139 to Matthew Jones (Garner-Webb University) to allow for activities proposed in his pollination study proposal including covering flowers and collecting flowers and seeds from this occurrence. Permit expires 31 December 2009 [permit attached to EO 100] (NCPCP 2009).

OWNERSHIP

Managed Areas Broad River Greenway

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 25900

EO Number 274

Owner Type	Owner Name	Notes
Local government	Broad River Greenway -town of Boiling Springs	

Owner Comments

Management Comments

Protection Comments This occurence is afforded some protection as part of the Broad River Greenway.

Additional Topics

DOCUMENTATION

Reference Code	Citation
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.
G09PCP01NCUS	N.C. Plant Conservation Program. 2009. Protected Plant Conservation Permit and Record, issued in 2009.
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.

VERSION

Version Author Robinson **Version Date** 2015-10-01

Transcribed By JEP **Transcription Date** 2008-03-24

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 26004
EO Number 275

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Catawba

County Name
Iredell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Buffalo Shoals Creek
NCDOT TIP: B-2146 SR 1333 Eufola Road over Buffalo Shoals Creek

Directions Iredell County, Buffalo Shoals Creek. "Southwest quadrant of Bridge N0. 86 on SR 1333 (Eufola Road) over Buffalo Shoals Creek. Site located approximately 7.0 miles southwest of Statesville, NC and approximately 1.0 mile east -southeast of the intersection of SR 1333 (Eufola Road) and US Route 70. Site located in natural resouce project [NC DOT] study of TIP No. B-2146" (Bassette 2007).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2014-05-21
EO Rank Comment EO rank based on EO Rank Specs for this species (Wichmann 2008).
EO Data **2014**: 257 plants counted by NCDOT biologist on 21 May 2014 (NCDOT 2014).
2010: 230 vegetative individuals observed by NCDOT biologists on 09 November 2010 (Renninger 2010).
2007: 192 individual clumps, with 50% estimated of these flowering; observed on 11 July 2007 by NCDOT biologists; entire polulations surveyed, actual plant count was conducted on foot using field transects throughout the entire population which is 0.35 acre in size (Bassette 2007).

Source Feature Identifier 45094
Source Feature Locator Buffalo Shoals Creek
Source Feature Descriptor Bassett, 2007

Source Feature Identifier 90108
Source Feature Locator Buffalo Shoals Creek
Source Feature Descriptor 2014; NCDOT

Surveyors Tim Bassette, NC Dept. of Transportation
James Padgett, NCNHP
Heather Renninger, NCDOT
Melissa Miller, NCDOT
Dennis Herman, NCDOT
Mike Sanderson, NCDOT

Survey Type Quantitative ground survey

Survey Date 2014-05-21 **First Observation Date** 2007-04-17 **Last Observation Date** 2014-05-21
Data Sensitive Element N **Comments**
Monitoring Needs Comments NCDOT is monitoring this population as part of a commitment to USFWS (Renninger 2010).
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Majority of site occurs in a Piedmont/Coastal Plain Heath Bluff (high quality); some of the site occurs in a Mesic Mixed Hardwood Forest (Piedmont subtype) (high quality). Soils on most of the site are mapped as LuF (Louisburg and Louisa soils, 25-55% slopes); very southern and eastern fringes are mapped as CsE2 (Cecil soils, 15-25% slopes, eroded).
Associated species*:* Fagus grandifolia, Quercus alba, Quercus rubra, Quercus falcate, Liquidambar styraciflua, Acer rubrum,
Oxydendrum arboretum, Carpinus caroliniana, Cornus florida, Hammamelis virginiana, Kalmia latifolia, Halesia Carolina,

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 26004

EO Number 275

Leucothoe fontanesiana, Viburnum acerifolium, Smilax spp., Vaccinium vacillans, Vitis rotundifolia, Hexastylis arifolia, Polystichum acrostichoides, Tipularia discolor, Asplenium platyneuron (Renninger 2010).
High quality Piedmont/Coastal Plain Heath Bluff and high quality Mesic Mixed Hardwood Forest (Piedmont subtype). Associated NC watch list species include: Trillium catesbaei and Nestronia umbellula. Population extends from top of stream bank to near crest with most individuals occuring on the midslope. Moisture regime is well-drained, moist, to mesic. Canopy cover is approximately 50% with a prevalence of understory trees and shrubs (Bassette 2007).

Min. Elevation 700 **feet** **Max. Elevation** 900 **feet**

EO Observed Area 0.35 **acres**

Rep Accuracy High

Separation Comments EO is not located within 2.0 kilometers of another known EO of the same species

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Jimmy Lee Shaver	

Owner Comments

Management Comments

Protection Comments

Additional Topics Invasive species pose a low threat overall, a small amount of Microstegium vimineum and Lespedeza cuneata are located outside the population but along nearby roadside. Albizia julibrissin occur along the edges of the site [population?] (Bassette 2007).

DOCUMENTATION

Reference Code	Citation
F07CON01NCUS	Contributed. 2007. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Wichmann **Transcription Date** 2008-05-02

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 26982
EO Number 276

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name	County Name	Watershed
Boiling Springs South	Cleveland (NC)	03050105 - Upper Broad
Chesnee	Rutherford (NC)	

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Cliffside Steam Station
USFWS Flex Fund Monitoring Site 7
South Shore Cliffside Steam Station Ash Basin Transplant

Directions Cliffside Steam Station. Scattered on the Steam Station Property. There are two areas where impacts from various projects occur: 1) East of Suck Creek: Adjacent to the ash pond, on its east and southeast sides. Plants also found elsewhere on the property [data was not reported, only that plants are present] (USFWS 2008). 2) McCombs Road: In the area west of McCombs road and between the transmission lines that cross the McCombs Road 0.25 road mile and 0.55 road mile south of Matheny Road (SR-1190); also on the south bank of the Broad River, just east of the transmission line (USFWS 2009).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-06-20
EO Rank Comment

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 26982

EO Number 276

EO Data **2016**: Bloom counted 2,458 plants on June 9 and 20, 2016 in 1.9 acres of monitoring plots (the southern-most plot was not counted in 2016). Estimated 39,535 total plants covering the entire 30.5 acre population (Bloom 2016).
2015: Padgett counted 2943 plants on 27 May 2015 in 2.86 acres of monitoring plots. Estimated 33,559 total plants covering the entire 30.56 acres (Padgett 2015).
2014 : 2866 plants observed in permanent monitoring plots by Padgett on 6 and 11 June 2014, estimated 32681 total plants covering 30.56 acres (Padgett 2014).
2013: 2909 plants observed in permanent monitoring plots by Padgett and Israel on 8 May 2013, estimated 33,171 total plants covering 30.56 acres (Padgett 2013).
2012: Padgett counted 2287 plants in permenant monitoring plots. Total population estimate is 26000+ plants (Padgett 2012).
Pre 2012: Based on surveys conducted between 2005-2008, Siler estimates that there are at least 5,500 plants spread throughout the property. This number includes those east of Suck Creek, in the ash pond project area (Siler 2009).
McCombs Road/Broad River:
2009: USFWS and Environmental Resources observed 3,150+ plants in this action area in 2009: 3000+ in the area west of the proposed switching station on the west side of McCombs Road and about 150 plants east of the transmission line corridor on the Broad River. Four plants near the switching station site will be impacted by its construction; these are to be relocated to a site elsewhere within the population (USFWS 2009).
East of Suck Creek:
2011: 65 plants total (plot A=15 plants; C=18 plants; D=27 plants; F=5 plants) observed by Siler in the four circular plots on 28 September 2011. Comparing October 2010 numbers to September 2011 numbers, the data indicates 115% survival in plot A; 86% survival in plot B; 73% in plot C; and 71% in plot F (Siler 2011).
2010: 78 plants total (plot A=13 plants; C=21 plants; D=37 plants; F=7 plants) observed by Siler in the four circular plots on 01 October 2010. Comparing October 2009 numbers to October 2010 numbers, the data indicates 62% survival in plot A; 110% survival in plot B; 69% in plot C; and 100% in plot F (Siler 2010).
2009: On 04 April 2009, four 3 sqm circular plots were established by Environmental Resources staff in order to monitor the relocated plants. A total of 101 plants (plot A=21 plants; C=19 plants; D=54 plants; F=7 plants) were observed by Siler in the plots on 07 October 2009; a total of 79 plants (plot A=18 plants; C=19 plants; D=30 plants; F=12 plants) were observed by Siler in the plots on 04 April 2009 (Siler 2009).
2008: On 06 June 2008, Siler observed 136 plants from those moved in September 2007 survived - 81% survival with some resprouting from previously reported dead plants. On 04 June 2008, Siler observed 772 plants of the 908 plants moved in December 2007 survived - 90% survival; many plants flowering (Siler 2011). Environmental Resources staff observed in the spring of 2008 that 189 of the transplants did not survive. Therefore, the total number of plants now protected in the "action area" was estimated to be 1,111 (USFWS 2008).
2007: Siler observed on 03 November 2007 that 121 of the 168 plants moved in September 2007 survived - 72% survival (Siler 2011). 1,097 plants were relocated to 5+ feet upslope from the historic full-pool elevation: 168 plants on 06 & 07 September 2007, 21 plants on 03 November 2007, and 908 plants on 03 & 07 December 2007 (USFWS 2008). Approximately 1,300 plants were observed in the "action area" by Environmental Resources staff sometime before 10 August 2007 (USFWS 2008).

Source Feature Identifier 68189
Source Feature Locator Cliffside Steam Station, east of Island Ford Flatrocks
Source Feature Descriptor Padgett 2012

Source Feature Identifier 68190
Source Feature Locator Cliffside Steam Station, east of Island Ford Flatrocks, EO 276 plots
Source Feature Descriptor Padgett EO 276 plots

Surveyors J. Robert Siler, Envir. Resources of the Carolinas
James Padgett, NCNHP
Kimberly Israel, NCNHP

Survey Type Quantitative ground survey

Survey Date 2016-06-20 **First Observation Date** 2007-08-10-Pre **Last Observation Date** 2016-06-20

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 26982
EO Number 276

DESCRIPTION

General Description Wooded area adjacent to coal-fired powerplant ash basin (USFWS 2008).
Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area 10.22 **acres**
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Duke Energy	2012, 2015, 2016 permission granted

Owner Comments Duke Energy contact is Steve Hodges and James Padgett spoke with him on 2016-03-17.
Management Comments
Protection Comments Duke Energy proposed posting signs in the area where the plants were relocated. However, this is not permanent protection because Duke Energy is conducting extensive planning for the installation of scrubbers, expansion of generation, and retirement of older units; therefore, Duke Energy requires the option of using the land where the plants are located for these purposes (USFWS 2008).
Additional Topics Plants were impacted by the raising of the ash pond water levels. The plants were not discovered until after temporary innundation but most did not survive this event. Additionally, about 17% of the plants did not survive the relocation, which done to avoid innundating them. The population may still be impacted by expansion activities at this facility (2008).

DOCUMENTATION

Reference Code	Citation
N08FWS01NCUS	U.S. Fish and Wildlife Service. 2008. Biological Opinion: 2007 Emergency Consultation on Cliffside Steam Station Hexastylis naniflora. Log Number 4-2-07-155.
F09CON01NCUS	2009. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
U09SIL01NCUS	Siler, J. Robert. 2009. Management recommendations for Dwarf-flowered Heartleaf, a federally protected species, on Cliffside Steam Station property [monitoring data also attached to this document].
U11SIL01NCUS	Siler, J. Robert. 2011. Monitoring data for Dwarf-flowered Heartleaf, a federally protected species, on Cliffside Steam Station property.
N09FWS01NCUS	U.S. Fish and Wildlife Service. 2009. Biological Opinion on the proposed construction of Duke Energy's Cliffside Switching Station and 500-kV transmission line in Cleveland County, North Carolina. Log number 4-2-08-290.
U10SIL01NCUS	Siler, J. Robert. 2010. Monitoring data for Dwarf-flowered Heartleaf, a federally protected species, on Cliffside Steam Station property.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.

VERSION

Version Author Robinson **Version Date** 2016-07-26
Transcribed By Mason **Transcription Date** 2009-01-29

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 27352
EO Number 277

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Hickory

County Name
Catawba (NC)

Watershed
03050102 - South Fork Catawba

Latitude [redacted] **Longitude** [redacted]

Site Name

Survey Site
Hickory: Martin Marietta Quarry

Directions Hickory: Martin Marietta Quarry. The property is located on the north side of SR-1465 (11 Avenue SE) just east of Hickory; two subpopulations are located in the ravine located near the middle of the property: East subpopulation is located just east of the powerline corridor and downslope of the Temporary Access Road, near [redacted] West subpopulation is located on the west side of the powerline corridor, immedately downslope of where the Access Road comes off the corridor, near [redacted] (Matthews 2009).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2011-11-04
EO Rank Comment
EO Data 132 plants dug by HARP [from the west occurrence] on 04 November 2011 and relocated to EO 294 (Bud Geitner Park); relocation occurred to permit expansion at the quarry [see 'Additonal Topics']; Matthews reported that, as far as any plants remaining at this location, "I am satisfied we got what was there"; if the quarry is developed, any remaining plants will be extirpated (HARP 2011, Matthews 2012). Total of 82 plants observed at two locations by Matthews and Gaffney on 03 April 2009: East subpopulation - 18 plants in an area of 50x40 feet; West subpopulation - 64 plants in flower over 100 square feet (Matthews 2009).

Source Feature Identifier 48978
Source Feature Locator East subpopulation
Source Feature Descriptor 2009; Matthews

Source Feature Identifier 48979
Source Feature Locator West subpopulation
Source Feature Descriptor 2009; Matthews

Surveyors James Matthews, HARP
Lisa Gaffney, HARP
David Campbell, HARP

Survey Type

Survey Date 2011-11-04 **First Observation Date** 2009-04-03 **Last Observation Date** 2011-11-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mixed oak-hickory forest on north-facing slopes of a ravine (Matthews 2009).
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments** Occurrence is separated from the next closest occurrence by an interstate highway and is greater than 2km from other conspecific occurrences.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 27352
EO Number 277

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments

Additional Topics Relocation of plants from this occurrence occurred to permit expansion at the quary. At the request of Martin Marietta, negotiations were held with USFWS regarding the potential for transplanting the population. This action was approved verbally by USFWS on 23 May 2011 (HARP 2011). "The proposed location of CMP #1 and Basins #7 and #8 can impact [the west subpopulation] of plants...There is no proposed developmental impact for [the east subpopulation] of plants" (Matthews 2009).

DOCUMENTATION

Reference Code	Citation
F09CON01NCUS	2009. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F12CON01NCUS	2012. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.

Specimen
HERB.UNCC, J.F. Matthews & L.R. Gaffney, 03 April 2009.

VERSION

Version Author Mason **Version Date** 2012-04-02
Transcribed By Mason **Transcription Date** 2009-04-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 27427
EO Number 278

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Polkville

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
West Fork Brushy Creek

Directions West Fork Brushy Creek: Northeast of the town of New House, along the south side of West Fork Brushy Creek, about halfway between SR-1359 (Jenkins Road) and SR-1361 (West Stage Coach Trail).

SURVEY INFORMATION

EO Rank H - Historical **EO Rank Date** 1980
EO Rank Comment Changed from D (1980) ranked to Historical.
EO Data One clump observed in a square meter by Gaddy in 1980 (Gaddy 1980).

Source Feature Identifier 49126
Source Feature Locator West Fork Brushy Creek
Source Feature Descriptor 1980; Gaddy

Surveyors L. L. Gaddy **Survey Type** Qualitative ground survey
Survey Date 1980 **First Observation Date** 1980 **Last Observation Date** 1980
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Low, north facing bluff (Gaddy 1980).
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code	Citation
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 27427

EO Number 278

VERSION

Version Author	Robinson	**Version Date**	2015-11-25
Transcribed By	Mason	**Transcription Date**	2009-04-28

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28199
EO Number 279

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Northeast Lincolnton: Unnamed tributary of Walker Branch

Directions Northeast Lincolnton: Unnamed tributary of Walker Branch. Occurrence located along the unnamed tributary of Walker Branch near where the tributary crosses the north-south transmission line located between SR-1286 (N. Newbold Street) and SR-1287 (N. Roper Drive), north of NC-27 (Luckenbaugh 2009).

SURVEY INFORMATION

EO Rank D? - Possibly poor estimated viability **EO Rank Date** 2009-04-20
EO Rank Comment
EO Data A "small" population observed by Luckenbaugh on 20 April 2009. No other Hexastylis species were observed downstream from the population to Walker Branch; upstream area not surveyed (Luckenbaugh 2009).

Source Feature Identifier 52303
Source Feature Locator Unnamed tributary of Walker Creek
Source Feature Descriptor 2009-04-20; Luckenbaugh

Surveyors Catherine Luckenbaugh, S&ME **Survey Type**
Survey Date 2009-04-20 **First Observation Date** 2009-04-20 **Last Observation Date** 2009-04-20
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code	Citation
F09CON01NCUS	2009. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28199
EO Number 279

VERSION

Version Author	Robinson	**Version Date**	2015-12-07
Transcribed By	Mason	**Transcription Date**	2009-12-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28343
EO Number 280 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Creek, Lovelady 9 (Sub EO of EO 178)
NCDOT TIP: R-2824

Directions Catawba River: Hoyle Creek, Lovelady 9 (Sub EO of EO 178). Site is on the south side of SR-1546 (Lovelady Road), approximately 1,000 feet east of Hoyle Creek (Bassette 2009).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2009-04-07
EO Rank Comment
EO Data **2009:** Site visted by Herman and Renninger on 07 April 2009; plants present and flowering, no count made (Bassette 2009).
2008: 126 plants in 0.16 acre counted by NCDOT staff on 12 June, 11 July, and 05 August 2008. Surveys were performed outside of the optimal survey window (Bassette 2009).

Source Feature Identifier 52922
Source Feature Locator Hoyle Creek, Lovelady Site 9
Source Feature Descriptor 2009; NCDOT

Surveyors NCDOT staff **Survey Type**
Survey Date 2009-04-07 **First Observation Date** 2008-06-12 **Last Observation Date** 2009-04-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Roadside embankment, telephone utility line easement, and inside adjacent tree line. Maintained/disturbed and Mesic Mixed Hardwood Forest community types (Bassette 2009).
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments** Sub EO 161 is located 0.03 km to the southeast; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO178 is approximately 1.5 air kilometers from EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See map for details.

General Comments: Dennis Herman (NCDOT) and Heather Renninger (NCDOT) visted this site on 07 April 2009 to confirm the identity of the Hexastylis individuals. Flower morphology was examined in over 50 randomly selected plants and all were consistent H. naniflora characteristics. No evidence of other Hexastylis species was found at this site (Bassette 2009).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28343

EO Number 280 **Parent EO Number** 178

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Protection of NCDOT ROW is occurring through fee simple acquision; this is currently in progress as of May 2009 (Bassette 2009).

Additional Topics Project let date is 15 June 2010. NCDOT is working to secure a conservation easement on the portion of this site that remains intact after the construction; as of 20 January 2010, the easement had not been secured. If the easement cannot be secured, NCDOT biologists will remove the 67 plants and hold them until it can or hold until another suitable site is acquired (Bassette 2010). NCDOT project construction (R-2824) will incur adverse effects (direct and indirect impacts) to 0.1275 acre of the 0.16 acre population, cause an anticipated loss of 73 of 126 plants. Prior to construction, NCDOT biologists will remove the 67 plants that will be directly impacted to areas within the same site that will not be impacted [the easement area]. Monitoring will take place every two years of a six year period after construction activities area completed (Bassette 2009).

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.
G10DOT01NCUS	Bassette, Tim. 2010. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2428. [Biological Opinion is included in the materials].

VERSION

Version Author Mason **Version Date** 2010-03-04

Transcribed By Mason **Transcription Date** 2010-03-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28350
EO Number 281 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, Lovelady 12 and 13 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions Catawba River: Hoyle Crk-Micol Crk, Lovelady 12 and 13 (Sub EO of EO 178). Present at two areas on the north side of SR-1546 (Lovelady Road), just east of Crescent Street in the woods behind [north of] a large industrial facility: Lovelady 12 - about 900 feet west of Hoyle Creek; Lovelady 13 - about 1,500 feet west of Hoyle Creek (Bassette 2009).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2009-04-07
EO Rank Comment
EO Data **2009:** NCDOT biologists confirmed the identity of the plants at both sites as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants at both sites on 21 October 2008; presence noted, no count made (Bassette 2009).

Source Feature Identifier 52941
Source Feature Locator Hoyle Crk-Micol Crk, Lovelady site 12
Source Feature Descriptor 2008: NCDOT

Source Feature Identifier 52942
Source Feature Locator Hoyle Crk-Micol Crk, Lovelady site 13
Source Feature Descriptor 2008; NCDOT

Surveyors NCDOT biologists **Survey Type**
Survey Date 2009-04-07 **First Observation Date** 2008-10-21 **Last Observation Date** 2009-04-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Sub EO282 is located 0.2 km to the south; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.
General Comments: These sites are located outside of the R-2824 right-of-way and outside of the project study corridor, so their boundaries were not recorded with GPS nor were formal counts made (Bassette 2009).

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28350

EO Number 281 **Parent EO Number** 178

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-15
Transcribed By	Mason	**Transcription Date**	2010-03-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28351
EO Number 282 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: Hoyle Crk-Micol Crk, Lovelady 10 and 11 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions Catawba River: Hoyle Crk-Micol Crk, Lovelady 10 and 11. (Sub EO of EO 178). Present in the woods at he southeast quadrant of Lovelady Road/Laurel Street intersection: Lovelady 10 - about 1,100 feet south of Lovelady Road and 850 feet west of Hoyle Creek; Lovelady 11 - Main segment of site is about 300 feet south of Lovelady Road; one fork of site found between Owens Avenue and Barus Avenue; second fork located between Arus Avenue and Ponswood Avenue (Bassette 2009).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2009-04-07
EO Rank Comment
EO Data **2009:** NCDOT biologists confirmed the identity of the plants at both sites as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants at both sites on 21 October 2008; presence noted, no count made (Bassette 2009).

Source Feature Identifier 52943
Source Feature Locator Hoyle Crk-Micol Crk, Lovelady site 11
Source Feature Descriptor 2008; NCDOT

Source Feature Identifier 52944
Source Feature Locator Hoyle Crk-Micol Crk, Lovelady site 10
Source Feature Descriptor 2008; NCDOT

Surveyors NCDOT biologists **Survey Type**
Survey Date 2009-04-07 **First Observation Date** 2008-10-21 **Last Observation Date** 2009-04-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments**
General Comments: These sites are located outside of the R-2824 right-of-way and outside of the project study corridor, so their boundaries were not recorded with GPS nor were formal counts made (Bassette 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual		

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28351

EO Number 282 **Parent EO Number** 178

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-15
Transcribed By	Mason	**Transcription Date**	2010-03-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28352
EO Number 283 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: McGalliard Creek, Lovelady 14 and 15 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions Catawba River: McGalliard Creek, Lovelady 14 and 15 (Sub EO of EO 178). Lovelady 14: Located in the woods between Forest Drive and Laurel Street, about 250 feet west of Laurel Street (Bassette 2009). Lovelady 15: Located between Falls Road and Laurel street in woods about 200 feet south of Meytre Avenue, about 800 feet northwest of the end of Villar Lane (Bassette 2009).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2009-04-07
EO Rank Comment
EO Data **2009:** NCDOT biologists confirmed the identity of the plants at both sites as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants at both sites on 21 October 2008; presence noted, no count made (Bassette 2009).

Source Feature Identifier 52945
Source Feature Locator McGalliard Creek, Lovelady 14
Source Feature Descriptor 2008; NCDOT

Source Feature Identifier 52946
Source Feature Locator McGalliard Creek, Lovelady site 15
Source Feature Descriptor 2008; NCDOT

Surveyors NCDOT biologists **Survey Type**
Survey Date 2009-04-07 **First Observation Date** 2008-10-21 **Last Observation Date** 2009-04-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Sub EO282 is located 0.1km to the east; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See map for details.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28352

EO Number 283 **Parent EO Number** 178

General Comments: These sites were located outside of the R-2824 right-of-way and outside of the project study corridor, so their boundaries were not recorded with GPS nor were formal counts made (Bassette 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual		

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-15
Transcribed By	Mason	**Transcription Date**	2010-03-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28353
EO Number 284 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Catawba River: McGalliard Creek, Lovelady 16 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions Catawba River: McGalliard Creek, Lovelady 16 (Sub EO of EO 178). Located in woodlands about 200-400 feet south of Murphy Lane and 700-900 feet west of Laurel Street (Bassette 2009).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2009-04-07
EO Rank Comment
EO Data **2009:** NCDOT biologists confirmed the identity of the plants as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants on 21 October 2008; presence noted, no count made (Bassette 2009).

Source Feature Identifier 52947
Source Feature Locator Lovelady site 16
Source Feature Descriptor 2008; NCDOT

Surveyors NCDOT biologists **Survey Type**
Survey Date 2009-04-07 **First Observation Date** 2008-10-21 **Last Observation Date** 2009-04-07
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** Sub EO281 is located 0.7km to the east; sub EO283 is located 0.3km to the south ; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See msp for details.
General Comments: This site was located outside of the R-2824 right-of-way and outside of the project study corridor, so its boundaries were not recorded with GPS nor were formal plant counts made (Bassette 2009).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual		

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28353

EO Number 284 **Parent EO Number** 178

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.

VERSION

Version Author	Amoroso	**Version Date**	2015-10-15
Transcribed By	Mason	**Transcription Date**	2010-03-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28359

EO Number 286 **Parent EO Number** 247

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Forest City
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
New Bethel Rare Plant Site

Survey Site
Broad River: New Bethel Plant Site, Tate Conservation Easement (Sub EO of EO 247).
NCDOT TIP: R-2233 US 221 Rutherfordton Bypass
NCDOT Tate Conservation Easement Transplant Plots

Directions Tate Conservation Easement. Plants are located within 23 plots on the Tate conservation easement; the property is located on the east side of US-221 between SR-2287 (Jaynes Road) to the north and the railroad tracks to the south (Fontaine 2009). [Note: Transplant plots (EO 286) source feature currently overlaps area of native plants (EO 106). M. Buchanan (pers. comm. with S. Mason, 10 March 2009) advised to leave mapping this way because the native population may be patchy and the polygon provided by Padgett (2007) may not account for this and encompass the entire extent of the occurrence.]

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2015-04-22

EO Rank Comment

EO Data
2015: 326 plants counted on 22 April (NCDOT 2015).
2013: 181 plants counted on 16 April (NCDOT 2013).
2011: 284 plants counted on 15 April (NCDOT 2011).
2010: On 27 January 2010, NCDOT biologists relocated 276 plants from eight EOs into 23 plots; EOs were not mixed in the plots [see Additional Topics for more details]. Donor EOs were: EO 076 = 4 plants; EO 106 = 93 plants; EO 113 = 7 plants; EO 114 = 14 plants; EO 172 = 9 plants; EO 174 = 35 plants; EO 175 = 114 plants (Fontaine 2010).

Source Feature Identifier 53009
Source Feature Locator Tate Conservation Easement transplant plots
Source Feature Descriptor 2010; NCDOT Transplant plots

Surveyors NCDOT biologists
Heather Wallace Renniger, NCDOT
Neil Medlin, NCDOT
Tim Bassette, NCDOT
Matt Haney, NCDOT
Phil May, Carolina Ecosystems
Chris Hopper, Carolina Ecosystems
Rob Crowther, Carolina Ecosystems
Moni Bates, Alderman Environmental

Survey Type Quantitative ground survey

Survey Date 2015-04-22 **First Observation Date** 2010-01-27 **Last Observation Date** 2015-04-22

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28359

EO Number 286 **Parent EO Number** 247

DESCRIPTION

General Description Dry-mesic Oak Hickory; high quality; Associated species: Quercus alba, Quercus rubra, Quercus coccinea, Quercus velutina, Carya tomentosa [C. alba], Pinus echinata, Oxydendron arboretum, Euonymus americana, Cornus florida, Liriodendron tulipifera, Lonicera sempervirens, Carex sp (Renninger 20005) and Mesic Mixed Forest grading into Basic Mesic Forest, medium to high quality, Pacolet soils; Associated species: red oak, white oak, strawberry bush, carpinus, sourwood; alluvial and lower to upper slope; Micro-relief: flat, concave, convex, and drop-off; moist to dry; filtered light (Renninger 2003). [See EO 106 for documentation and details].

Min. Elevation **feet** **Max. Elevation** **feet**

EO Observed Area **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type	Owner Name	Notes
Private individual	Robert and Carolyn Tate	as of 2009
State government	NCDOT	easement owner

Owner Comments

Management Comments

Protection Comments

Additional Topics "Plants from each EO were placed into circular plots. Plots were chosen by locating areas near but not including resident [plants]. EO's were not mixed within a plot. The location of each plot was GPS'ed and plot size, EO, and total number of plants in the plot was recorded. A metal stake with metal label was installed in the center of each plot. Average planting density was about 4 plants per meter. We [NCDOT] required 23 plots to accomodate all the plants. Plenty of room for additional plots at this site. Approximately 96 person-hours were spent in the transplant effort" (Fontaine 2010).

DOCUMENTATION

Reference Code	Citation
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.
F15DOTNCUS	N.C. Department of Transportation. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.

VERSION

Version Author Amoroso **Version Date** 2016-07-15

Transcribed By Mason **Transcription Date** 2010-03-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28582
EO Number 287

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Landrum
Mill Spring

County Name
Polk (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Fox Knoll Farm

Directions Fox Knoll Farm: This property is located at 4863 Peniel Road, Tryon, NC. The driveway to the property is on the west side of SR-1525 (Peniel Road), 0.30 mile south of the SR-1525/SR-1527 (Bill Holbert Road) intersection (Torlina 2009). No data on the location of the occurrence with the property was provided with Torlina (2009).

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2016-08-04
EO Rank Comment
EO Data 2016: Several hundred clumps estimated on 4 August 2016. Plants and habitat are in excellent condition. (Tuttle 2016)
2009: Presence noted on 8 July 2009 and reported in the species list for this property, which is under easement with Pacolet Area Conservancy. (Torlina 2009, 2016).

Source Feature Identifier 53990
Source Feature Locator Fox Knoll Farm (Cochran property)
Source Feature Descriptor 2016; Tuttle

Surveyors Pam Torlina, Pacolet Area Conservancy
Julie Tuttle
Jim Troppmann, landowner

Survey Type

Survey Date 2016-08-04 **First Observation Date** 2009-07-08 **Last Observation Date** 2016-08-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** More habitat may exist along the connected stream networks on this and adjacent properties.

DESCRIPTION

General Description Moist, NE-facing bluff and streamside seepy areas in Mesic Mixed Hardwood Forest. Abundance is highest on the edges of small depressions (microtopography) and on relatively flat but well-drained areas next to the small stream channel. Abundance decreases with distance from the stream channel. The species is generally absent from a patch of Piedmont Heath Bluff dominated by Kalmia latifolia that occurs along the stream between the two mapped polygons. The forest is recovering from previous cutting, as evidenced by abundance of Liriodendron tulipifera in the canopy and average canopy tree diameter of approximately 10-12 inches. Habitat quality is excellent (Tuttle 2016).
This area is characteristic of a Dry-Mesic Oak-Hickory Forest, and consists of a maturing canopy and a lush understory of trees, shrubs, and herbaceous plants. This area also contains two tributaries to White Oak Creek. The first tributary flows north/northwest through the Property for approximately 2,506 feet; an approximately four acre lake is formed by this tributary. The second tributary flows north/northwest along the northeastern property line for approximately 1,337 feet...There is an approximately 15 acre Open Field within this area that is mostly grassy area and occasionally mowed. There are several trails, maintained by the Foothills Equestrian Trails Association, that traverse this area." See Torlina (2009) for a partial species list from the property.

Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28582

EO Number 287

General Comments: No introduced or invasive species observed in the natural area (Tuttle 2016).

OWNERSHIP

Managed Areas Pacolet Area Conservancy Easement

Owner Type	Owner Name	Notes
Private individual	Edward F. Cochran	as of 12/2009. Address: 4863 Peniel Road, Tryon, NC 28782. 828-894-3360.
Private individual	Jim and Ann Troppmann	2016 owners

Owner Comments

Management Comments

Protection Comments The "natural area" portion of the property is under conservation easement with Pacolet Area Conservancy (Torlina 2009).

Additional Topics

DOCUMENTATION

Reference Code	Citation
U09TOR01NCUS	Torlina, Pam. 2009. Fox Koll Farm - Cochroan property: Baseline documentation report for the Pacolet Area Conservancy; December 17, 2009.
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

VERSION

Version Author Amoroso **Version Date** 2016-08-23

Transcribed By Mason **Transcription Date** 2010-07-09

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28659
EO Number 291

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Granite Falls

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Gunpowder Creek: North of Hudson
NCDOT TIP No. R-3437
NCDOT TIP No. U-4700

Directions Gunpowder Creek, Caldwell County. Plants located approximately 1km north of the community of Hudson; to the west of US-321 and east of US-321A (Main Street); along Gunpowder Creek, its tributaries, and drains. See source features for details.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2010-04-21
EO Rank Comment 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

EO Data **2012:** 82 H. naniflora plants total counted at sites 22A, 24, and 26 by NCDOT biologists in the spring of 2012; 153 Hexastylis plants total observed at these sites but some were determined to not be H. naniflora: 65 H. naniflora at site 22A - 130 Hexastylis plants were present but only 50% were determined to be H. naniflora; 6 H. naniflora at site 24 - 12 Hexastylis plants were present but only 50% were determined to be H. naniflora; 11 H. naniflora at site 26 with 100% determined to be H. naniflora (NCDOT 2018). **2010:** 41 individuals over 0.42 acres observed by Renninger, Frazer, and Burroughs on 21 April 2010 at subpopulation C. About 25% vegetative, 75% in flower; seedlings present (Renninger 2010). 15 individuals (10 vegetative, 5 in flower) over 0.04 acres observed by Renninger and Herman on 07 April 2010 at subpopulation B. Plants small or single stems; seedlings present (Renninger 2010). **2009:** 159 Hexastylis plants total counted by Dustin and NCDOT biologists at sites 22, 22A, 24, and 26 on 08 July 2009 and 21 September; in 2012 a portion of these were determined by NCDOT biologists to be species other than H. naniflora (NCDOT 2018). **2007:** 317 individuals over 0.53 acres counted by Bassette, Herman, Medlin, Dilday, and Gray at subpopulation A on 28 March 2007. Plants mostly single stem with some small clumps; buds and flowers present (Bassette 2007).

Source Feature Identifier 54240
Source Feature Locator U-3437; Subpopulation A; North of Optimist Ave
Source Feature Descriptor 2007-03-28; Bassett et al. (2007); 317 indviudals over 0.53 acres - mostly single stem with some small clumps; buds and

Source Feature Identifier 54241
Source Feature Locator U-3437; Subpopulation B; South of Optimist Ave
Source Feature Descriptor 2010-04-07; Renninger (2010); 15 individuals (10 vegetative, 5 in flower) over 0.04 acres; seedlings present

Source Feature Identifier 54242
Source Feature Locator U-3437; Subpopulation C; North of the Mt. Herman Road/Mulberry Street intersection, in sewer easement
Source Feature Descriptor 2010-04-10; Renninger (2010); 41 individuals over 0.42 acres; about 25% vegetative, 75% in flower; seedlings present

Source Feature Identifier 109571
Source Feature Locator US-321/U-4700: Site 22A
Source Feature Descriptor 2009-07-08; NCDOT (2018); 65 H. naniflora plants over 0.11 acres - 130 Hexastylis plants total but 50% not H. naniflor

Source Feature Identifier 109572
Source Feature Locator US-321/U-4700: Site 24
Source Feature Descriptor 2009-07-09; NCDOT (2018); 6 H. nanilfora plants over 0.03 acres - 12 Hexastylis plants total but 50% not H. naniflora

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28659

EO Number 291

Source Feature Identifier 109573
Source Feature Locator US-321/U-4700: Site 26
Source Feature Descriptor 2009-07-08; NCDOT (2018); 11 plants (100% H. naniflora) over less than 0.01 acres

Source Feature Identifier 109803
Source Feature Locator US-321/U-4700: Site 22 [Dustin]
Source Feature Descriptor 2009-09-21; NCDOT (2018); 6 plants over less than 0.01 acres

Source Feature Identifier 140791
Source Feature Locator US-321/U-4700: Site 22A
Source Feature Descriptor 2012-Spring; NCDOT (2018); 65 H. naniflora plants - 130 Hexastylis plants total but 50% not H. naniflora

Source Feature Identifier 140792
Source Feature Locator US-321/U-4700: Site 24
Source Feature Descriptor 2012-Spring; NCDOT (2018); 6 H. nanilfora plants - 12 Hexastylis plants total but 50% not H. naniflora

Source Feature Identifier 140793
Source Feature Locator US-321/U-4700: Site 26
Source Feature Descriptor 2012-Spring; NCDOT (2018); 11 plants (100% H. naniflora)

Surveyors Tim Bassette, NCDOT
Dennis Herman, NCDOT
Neil Medlin, NCDOT
Jason Dilday, NCDOT
Jared Gray, NCDOT
Heather Renninger, NCDOT
Mary Frazer, NCDOT
Anne Burroughs, NCDOT
Brian Dustin, Mulkey Engineering

Survey Type

Survey Date 2012-Spring **First Observation Date** 2007-03-28 **Last Observation Date** 2012-Spring

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description **Supopulation A:** North-facing slope; plants mid-slope, some stream bank; moist, well drained site. Mesic Mixed Hardwood Forest (Piendmont subtype) - medim quality; Pacolet soils.Associated species: Fraxinus americana, spotted wintergreen, Polystichum acrostichoides, Asplenium platyneuron, Quercus falcata, Smilax rotundifolia, Liriodendron tulipifera, Quercus alba, Pinus strobus, Carpinus caroliniana, Ilex opaca, Cornus florida, Rhododendron maximum, Prunus serotina, cranefly orchid, Viola spp., Rubus argutus, Acer rubrum, Oxydendrum arboreum, Pinus virginiana, Tsuga canadensis (Bassette 2007).**Subpopulation B:** Mid-slope, dry, closed canopy. Mesic Mixed Hardwood Forest (Piendmont subtype) - disturbed, medim quality; Pacolet soils. Associate species: Quercus alba, Quercus rubra, Carya tomentosa, Fagus grandifolia, Pinus strobus, Rhododendron maximum, Ilex opaca, Lycopodium sp., Polystichum acrostichoides, Chimaphila maculata (Renninger 2010).**Subpopulation C:** North-facing slope in sewer easement next to unnamed tributary of Gunpowder Creek. Steep slope adjacent to stream. Pacolet soils. Associated species primarily tulip poplar with a mix of white pine, red maple, American holley, privet, poison ivy, and Japanese honeysuckle (Renninger 2010).**Sites 22A, 24:** Wooded areas with the NC 143 study area are fragmented by heavy human alteration and are best described as Mesic mixed Hardwood Forests, occurring on Congaree fine sandy loam soils. Associated species: Liriodendron tulipifera, Pinus virginiana, Carpinus caroliniana, Lonicera japonica, Ligustrum sinense, Smilax rotundifolia, Ilex opaca, Polystichum acrostichoides, Viola sp. (Dustin field form in NCDOT 2018).**Site 26:** This site is contained within a utility easement and would be classified as disturbed maintained. The soils are classified as Cecil-Urban land complex. Associated species: Liriodendron tulipifera (saplings), Pinus virginiana (saplings), Carpinus caroliniana, Lonicera japonica, Ligustrum sinense, Smilax rotundifolia, Ilex opaca, Polystichum acrostichoides, Rubus argutus

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 28659

EO Number 291

(Dustin field form in NCDOT 2018).

Min. Elevation **feet** **Max. Elevation** **feet**

EO Observed Area **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments Centerline of road project bisects subpopulation A; well-used dirt path traversing some of subpopulation A (Bassette 2007).

Additional Topics Sites 22A, 24, and 26 within project study area of NCDOT TIP No. U-4700 (NCDOT 2018). Subpopulation A within proposed road corridor of TIP No. U-3437; subpopulations B and C not within right-of-way but may be impacted - plants may be relocated if alternative is chosen (Renninger 2010).

DOCUMENTATION

Reference Code	Citation
F07DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff in 2007.
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.
F18DOT02NCUS	N.C. Department of Transportation. 2018. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2018 for NCDOT TIP No. U-4700. Documents and files are from various years including 2009 and 2012 but were supplied to NCNHP in 2018.

VERSION

Version Author Mason **Version Date** 2018-01-04

Transcribed By Mason **Transcription Date** 2010-07-27

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 29084
EO Number 292

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude [redacted] **Longitude** [redacted]

Site Name

Survey Site
Forest City: Adjacent to Isothermal Community College

Directions Forest City: Adjacent to Isothermal Community College. Occurrences located on the parcel east of the lake at Isothermal Community College, along the stream that drains the lake and just west of SR-2184 (Daniel Road); found at two locations on the site: the north occurrence is on the north side of the steam (headwater stream to Bracketts Creek), near [redacted]; the south occurrence is on the south side of the stream, near [redacted] [directions derived from coordinate locations] (Thompkins 2010).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2010
EO Rank Comment
EO Data Total of 150 plants observed at both locations by Tompkins in 2010; population observed to be in "2-3 segments" on the site (Tompkins 2010).

Source Feature Identifier 55521
Source Feature Locator North occurrence
Source Feature Descriptor Tomkins; 2010

Source Feature Identifier 55522
Source Feature Locator Southern occurrence
Source Feature Descriptor Tomkins; 2010

Surveyors Bryan Tompkins, USFWS **Survey Type**
Survey Date 2010 **First Observation Date** 2010 **Last Observation Date** 2010
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Local government	Rutherford County	

Owner Comments
Management Comments
Protection Comments

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 29084

EO Number 292

Additional Topics

DOCUMENTATION

Reference Code	Citation
F10FWS01NCUS	U.S. Fish and Wildlife Service. 2010. Rare species reports contributed to NCNHP by U.S. Fish and Wildlife Service personel in 2010.

VERSION

Version Author	Mason	**Version Date**	2011-01-05
Transcribed By	Mason	**Transcription Date**	2011-01-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 29086
EO Number 293

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Denver

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Killian Crossroads

Directions Killian Crossroads: Located along the headwaters of Killian Creek in the triangle formed by NC-150, NC-16, and SR-1855 (E. Maiden Road) just east of Killian Crossroads, near Not processed per agreement with Plaintiff/Requeste Not processed per agreement with Plaintiff/Requeste Not processed per agreement with Plaintiff/Requeste [directions derived from coordinate location] (Tompkins 2010).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2010?
EO Rank Comment
EO Data The presence of this occurrence was reported to the USFWS in 2010 by environmental consultants working for Lowe's [unclear at this time if it's Home Improvement or Grocery]. A store is proposed for construction. A Biological Assessment is being written and USFWS is awaiting a copy as of December 2010 [a copy was requested from USWFS by NCNHP in 12-2010] (Tompkins 2010).

Source Feature Identifier 55527
Source Feature Locator
Source Feature Descriptor Killian Creek headwaters area

Surveyors
Survey Type
Survey Date 2010? **First Observation Date** 2010? **Last Observation Date** 2010?
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Lowe's	

Owner Comments
Management Comments
Protection Comments
Additional Topics Lowe's is avoiding impacts to Hexastylis naniflora and over and acre of wetlands on the site (Tompkins 2010).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 29086

EO Number 293

DOCUMENTATION

Reference Code	Citation
F10FWS01NCUS	U.S. Fish and Wildlife Service. 2010. Rare species reports contributed to NCNHP by U.S. Fish and Wildlife Service personel in 2010.

VERSION

Version Author	Mason	**Version Date**	2011-01-05
Transcribed By	Mason	**Transcription Date**	2011-01-05

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 30019

EO Number 294 **Parent EO Number** 295

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Hickory Area: Bud Geitner Park Transplant Site (Sub EO of EO 295)

Directions Bud Geitner Park Transplant Site. Transplant site is within Bud Geitner Rotary Park, in a northwest-facing headwater, hardwood cove draining to the Catawba River, inside a curve of an existing paved walking trail (HARP 2011).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2014-04-09

EO Rank Comment

EO Data **2016:** 153 plants total observed on 20 March 2016 by Campbell; 104 plants (99%) survived from the Hickory site (EO 277) and 37 plants had flowers; 49 plants (100%) survived from the Lenoir site (EO 087) and 19 plants had flowers; all plants exhibited vigorous growth (HARP 2016).
2015: 154 plants total observed on 12 April 2015 by Campbell; 107 plants (98%) survived from the Hickory site (EO 277) and 46 plants had flowers; 49 plants (89%) survived from the Lenoir site (EO 087) and 21 plants had flowers; all plants exhibited vigorous growth (HARP 2015).
2014: 156 plants total observed on 09 April 2014 by Campbell; 107 plants survived from the Hickory site (EO 277) and 63 plants had flowers; 49 plants survived from the Lenoir site (EO 087) and 21 plants had flowers; all plants exhibited vigorous vegetative growth (HARP 2014).
2013: 158 plants total observed on 11 May 2013 by Campbell; 109 plants survived from the Hickory site (EO 277) and 92 plants had flowers; 49 plants survived from the Lenoir site (EO 087) and 37 plants had flowers; all plants exhibited vigorous vegetative growth (HARP 2013).
2012: 160 plants total observed on 09 April 2012 by Campbell and Matthews; 111 plants (84%) survived from the Hickory site (EO 277) and 72 plants had flowers; 49 plants (89%) survived from the Lenoir site (EO 087) and 49 plants had flowers; all plants exhibited vigorous growth (HARP 2012).
2011: Total of 187 plants relocated to this site into two plots by HARP biologists on 05, 06, and 11 November 2011 from EOs 087 and 277 (Martin Marietta quarry sites) [no indication a native population was present in this area]. 132 plants from the Hickory site (EO 277) were planted in an area delineated with red painted steel spikes and 55 plants from the Lenoir site (EO 087) were planted in an area delineated with glow orange painted steel spikes (HARP 2011).

Source Feature Identifier 60572
Source Feature Locator EO 294. Geitner Park transplant area
Source Feature Descriptor 2011; HARP

Surveyors Jim Matthews, HARP
David Campbell, HARP

Survey Type

Survey Date 2016-03-20 **First Observation Date** 2011-11-05 **Last Observation Date** 2016-03-20

Data Sensitive Element N **Comments**

Monitoring Needs Comments Monitoring for survival will begin in March/April 2012 and continue yearly until 2016 (HARP 2012).

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Northwest-facing headwater, hardwood cove draining to the Catawba River; the cove is in an undisturbed natural wooded area (HARP 2011).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 30019

EO Number 294 **Parent EO Number** 295

Min. Elevation **feet** **Max. Elevation** **feet**

EO Observed Area **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas Catawba County Open Space

Owner Type	Owner Name	Notes
Local government	Hickory Parks and Recreation	

Owner Comments

Management Comments HARP biologists removed sprigs of English ivy, for the fifth and final year of monitoring (HARP 2016). HARP biologists removed sprigs of English ivy and Japanese honeysuckle again, for the third year (HARP 2014). HARP biologists removed sprigs of English ivy and Japanese honeysuckle during their monitoring on 09 April 2012 (HARP 2012).

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F12HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2012. Field survey forms and related documents contributed by HARP biologists in 2012.
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F13HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2013. Field survey forms and related documents contributed by HARP biologists in 2013.
F14HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2014. Field survey forms and related documents contributed by HARP biologists in 2014.
F16HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2016. Field survey forms and related documents contributed by HARP biologists in 2016.
F15HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2015. Field survey forms and related documents contributed by HARP biologists in 2015.

VERSION

Version Author Amoroso **Version Date** 2016-04-22

Transcribed By Mason **Transcription Date** 2012-02-07

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 30023
EO Number 295

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem
Granite Falls

County Name
Burke (NC)
Caldwell (NC)
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Hickory Area: Parent EO

Directions Hickory Area: Parent EO. This is a parent EO of sub EOs 021, 294, 313 and 314, located northeast of Hickory, NC. See each sub EO for details.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2011-11-11
EO Rank Comment
EO Data This is a parent EO; see each sub EO for details.

Source Feature Identifier 60578
Source Feature Locator Hickory Area, Geitner Park
Source Feature Descriptor Parent EO 295

Surveyors **Survey Type**
Survey Date 2016-03-20 **First Observation Date** 1994-04-12 **Last Observation Date** 2016-03-20
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Nearest records are about 7 km away.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Local government	Hickory Parks and Recreation	

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 30023

EO Number 295

DOCUMENTATION

Reference Code	Citation
F16HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2016. Field survey forms and related documents contributed by HARP biologists in 2016.
F15HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2015. Field survey forms and related documents contributed by HARP biologists in 2015.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.
U06MOY03NCUS	Moye, William S. 2006. Highly Ranked Plants of the South Mountain Region. Unpublished notes sent via email to Misty Franklin in February 2006.
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
F12HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2012. Field survey forms and related documents contributed by HARP biologists in 2012.
F13HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2013. Field survey forms and related documents contributed by HARP biologists in 2013.
F14HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2014. Field survey forms and related documents contributed by HARP biologists in 2014.
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.

VERSION

Version Author Amoroso **Version Date** 2016-08-26

Transcribed By Mason **Transcription Date** 2012-02-07

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 31900
EO Number 296

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Kings Mountain

County Name
Gaston (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Unnamed tributary of King's Mountain Reservoir; east of South Crowders Creek Forests.

Directions East of South Crowders Creek Forests. Near 35.17981 N, -81.2807 W. About 400 m south-southeast of the intersection between Lewis Rd (SR-1112) and Sparrow Springs Rd. (SR-1125). About 1.3 km southeast of Sparrow Springs Lake. (Directions derived from coordinates provided by Wagner). Plants found from 10 m uphill of stream to 30 m downhill of homesite.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2012-03-16
EO Rank Comment
EO Data Wagner et. al. counted 100 plants on 16 March 2012 (Wagner 2012).

Source Feature Identifier 68178
Source Feature Locator East of South Crowders Creek Forests
Source Feature Descriptor Wagner 2012

Surveyors J. Wagner, ASU
Z. Murrell, ASU
M. Roberts, ASU
T. Jensen, ASU

Survey Type

Survey Date 2012-03-16 **First Observation Date** 2012-03-16 **Last Observation Date** 2012-03-16
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation 860 **feet** **Max. Elevation** 880 **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments** About 16 km from nearest conspecfic EO.
General Comments: Some plants in population have very small leaves. High morphological diversity across site. Plants vary in size/age (Wagner 2012).

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Private	

Owner Comments
Management Comments
Protection Comments Privately owned; no protection.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 31900

EO Number 296

Additional Topics

DOCUMENTATION

Reference Code	Citation
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.

VERSION

Version Author	Robinson	**Version Date**	2015-12-07
Transcribed By	Israel	**Transcription Date**	2013-05-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 32858
EO Number 297

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Blacksburg North

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Beaverdam Creek at First Broad River

Directions Located in southern Cleveland County along the east side of Burke Road at the bridge just east of the convergance of Poplar Branch and Hawkin's Branch into Beaver Dam Creek, on the north-facing slope.

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2011
EO Rank Comment
EO Data Located given in 2011 email of known plants at this location. The site is a steep north-facing slope with oaks and hickories present and heath in the understory (Padgett 2015).

Source Feature Identifier 73828
Source Feature Locator Beaverdam Creek at First Broad River
Source Feature Descriptor 2011; Horne

Surveyors Charles Horn (Newberry College) **Survey Type** Qualitative ground survey
Survey Date 2011 **First Observation Date** 2011 **Last Observation Date** 2011
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** This site has had no formal survey work.

DESCRIPTION

General Description
Min. Elevation 610 **feet** **Max. Elevation** 650 **feet**
EO Observed Area 0.46 **acres**
Rep Accuracy High **Separation Comments** This occurrence is within 2 km of EO 64, but because EO 64 is unconfirmed to be H. naniflora, it is not combined with that EO (Robinson 2015).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	private	

Owner Comments
Management Comments
Protection Comments This site/occurence has no formal protection.
Additional Topics

DOCUMENTATION

Reference Code **Citation**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 32858
EO Number 297

VERSION

Version Author	Robinson	**Version Date**	2015-11-25
Transcribed By	JEP	**Transcription Date**	2015-08-24

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 33039
EO Number 298

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Brushy Creek Headwaters

Directions Cleveland County; approximately 9km northwest of Shelby, 0.48 km south of the intersection of NC 226 and east Chatfiled Road (SR 1343). Occurrence is located at the end of a dead end road (Boyd Circle) in wooded area in the headwaters of Brushy Creek.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2014-04-15
EO Rank Comment
EO Data Padgett observed approximately 250-300 plants occurring In wooded area long slopes of small streams, eroded ditches, and flats on April 15, 2014. The habitat is a regenerating to rest with tulip poplar' red maple, willow oak, short leaf pine, and various young oaks (Padgett 2014).

Source Feature Identifier 74278
Source Feature Locator Brushy Creek Headwaters, Cleveland County
Source Feature Descriptor Padgett, 2014

Surveyors **Survey Type** Qualitative ground survey
Survey Date 2014-04-15 **First Observation Date** 2014-04-15 **Last Observation Date** 2014-04-15
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed Y **Comments** There are patches of suitable habitat around this occurrence.

DESCRIPTION

General Description Wooded area with regeneration forest comprised of tulip poplar, red maple, willow oak, short leaf pine,Virginia pine, oaks and a few hickories. Leather wood was present in a small patch of about 40-50 stems. Invasive species are a problem with Japanese honeysucke, multiflora rose, running bush, and privet (Padgett 2014).
Min. Elevation 900 **feet** **Max. Elevation** 920 **feet**
EO Observed Area 1.30 **acres**
Rep Accuracy High **Separation Comments** No known occurrences within 2km, however suitable habitat does exists within 2 km (Padgett 2014).
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	Steve Champion	

Owner Comments
Management Comments This site needs management for Lonicera japonica,
Protection Comments This site as no formal protection.
Additional Topics Leatherwood occurs with this occurrence

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 33039

EO Number 298

DOCUMENTATION

Reference Code	Citation
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes

VERSION

Version Author	Robinson	**Version Date**	2015-10-13
Transcribed By	Padgett	**Transcription Date**	2014-04-15

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 33240
EO Number 299

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude [redacted] **Longitude** [redacted]

Site Name

Survey Site
NCDOT
Lincoln County, SR-1314 (Will Schronce Road)

Directions Lincoln County, SR-1314 (Will Schronce Road). North side of SR-1314, about 0.1 road mile southwest of bridge over Hoyle Creek, on north-facing slope on south side of creek; near [redacted] (Cheely 2014; shapefile also provided).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2014-04-01
EO Rank Comment
EO Data 2014: About 27 plants over 0.08 acre, with 50% with early flower buds and 50% vegetative, observed by Cheely and Turchy on 01 April 2014; new leaves forming, some young plants with single leaf (Cheely 2014).
2010: Plants present; discovered by NCDOT on 13 April 2010 (Cheely 2014).

Source Feature Identifier 75082
Source Feature Locator Lincoln County, SR-1314 (Will Schronce Road).
Source Feature Descriptor Cheely; 2010

Surveyors Erin Cheely, NCDOT
Michael Turchy, NCDOT

Survey Type

Survey Date 2014-04-01 **First Observation Date** 2010-04-13 **Last Observation Date** 2014-04-01
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description North-facing slope adjacent to floodplain; with mature oak-hickory-beech forest. Associated species: Rattlesnake plantain (Cheely 2014).
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments Hardwood forest partly clearcut since 2010 (Cheely 2014).
Protection Comments
Additional Topics Area surveyed by NCDOT as part of natural resources work for replacement of SR-1314 over Hoyle's Creek [TIP No. B-5155] (Cheely 2014).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 33240

EO Number 299

DOCUMENTATION

Reference Code	Citation
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.

VERSION

Version Author	Mason	**Version Date**	2014-06-17
Transcribed By	Mason	**Transcription Date**	2014-06-17

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 34003
EO Number 300

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Stony Point

County Name
Iredell (NC)

Watershed
03050101 - Upper Catawba

Latitude [redacted] **Longitude** [redacted]

Site Name

Survey Site
Levan family farm

Directions Draingage west of Bradford Crossroads; population occupying wooded area near [redacted] (Levan 2013).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2013-04
EO Rank Comment
EO Data ~50 individuals located in drainage area, observed in April 2013 by Levan (Levan 2013).

Source Feature Identifier 78490
Source Feature Locator Levan family farm
Source Feature Descriptor 2013-04; Levan

Surveyors Byron Levan **Survey Type** Qualitative ground survey
Survey Date 2013-04 **First Observation Date** 2013-04 **Last Observation Date** 2013-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual		

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code	Citation
F14CON01NCUS	2014. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 34003

EO Number 300

VERSION

Version Author	Robinson	**Version Date**	2015-11-25
Transcribed By	Feldman	**Transcription Date**	2014-10-13

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 34778
EO Number 302

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Lincolnton East
Lincolnton West

County Name
Lincoln (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Rhyne Conservation Preserve

Survey Site
South Fork Catawba River: Parent EO

Directions South Fork Catawba River: Parent EO. This is a parent EO of sub EOs 047 and 262, located south of South Lincolnton, near and along South Fork Catawba River. See each sub EOs for details.

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2014-05-29
EO Rank Comment EO 262 was agumented and is very large, thus is the driver of this parent EO's rank.
EO Data See each sub EO for details.

Source Feature Identifier 80725
Source Feature Locator Rhyne Conservation Preserve
Source Feature Descriptor Parent EO 302

Surveyors **Survey Type**
Survey Date 2016-05-05 **First Observation Date** 1999-03-29 **Last Observation Date** 2016-05-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. EO 299 occurs about 6 km to the east; EO 279 occurs about 3.5 km to the north (Amoroso 2015).
General Comments:

OWNERSHIP

Managed Areas NC Clean Water Management Trust Fund Easement
Catawba Lands Conservancy Easement

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 34778

EO Number 302

DOCUMENTATION

Reference Code	Citation
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.
F05FRA01NCUS	Franklin, M. A. 2005. Field notebook for site visits conducted in 2005.
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.
F05WIC01NCUS	Wichmann, B. 2005. Field notebook for field survey/site visits conducted by Brenda Wichmann in 2005.
F06CON01NCUS	Contributed. 2006. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.
F99CON01NCUS	Contributed. 1999. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.

VERSION

Version Author Amoroso **Version Date** 2016-06-16

Transcribed By Mason **Transcription Date** 2015-03-10

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35113
EO Number 303

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
Smith Cliff/Henry Fork River

Survey Site
Hybrid
Smith Cliff/Henry Fork River

Directions Smith Cliff/Henry Fork River: Located in Southern Burke County approximately half way betweek Highway 18 and Old highway 18, north of River Road (SR 1922), along slopes of Henry Fork River.

SURVEY INFORMATION

EO Rank AB - Excellent or good estimated viability **EO Rank Date** 2015-04-19
EO Rank Comment
EO Data Padgett observed plants along both sides of the river and predominantly along north slopes. Hundreds of plants were observed on 28 April 2015 (Padgett 2015).

Source Feature Identifier 83983
Source Feature Locator Smith Cliff/Henry Fork River
Source Feature Descriptor 2015-04-28, Padgett

Surveyors James Padgett, NCNHP **Survey Type** Qualitative ground survey
Survey Date 2015-04-28 **First Observation Date** 2015-04-28 **Last Observation Date** 2015-04-28
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** This occurrence has some charactistics of both Hexastylis naniflora and Hexastylis heterophylla. This area may be a hybridization zone. All know occurrences in the region have all been mapped as H. naniflora (Padgett 2015).

DESCRIPTION

General Description Oak hickory forest with a high percentage of pines (mostly white pines) present. The plants occur on north-facing slopes and along both sides of the river. Plants occur in both areas with mountain laurel present and in more open understory with a rich and diverse herbaceous layer present.
Min. Elevation 1,090 **feet** **Max. Elevation** 1,300 **feet**
EO Observed Area 9.20 **acres**
Rep Accuracy High **Separation Comments** This occurrence is a separate EO from 219, located approximately 1100 meters to the south west due to some unsuitable habitat (Padgett 2015). This population is also a possible hybrid and EO 219 is not documented to show evidence of hybridization, therefore kept as a separate EO (Robinson 2015).
General Comments:

OWNERSHIP

Managed Areas Foothills Conservancy of North Carolina Preserve
Smith Cliff/Henry Fork River Registered Heritage Area

Owner Type	Owner Name	Notes
Private organization	Foothills Conservancy of North Carolina	contact: Tom Kenney

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35113

EO Number 303

Owner Comments

Management Comments	Registered Heritage Area. There are some very minor exotic plant species issues, especially air potato (Dioscorea batatas) and privet.
Protection Comments	Much of the areas the occurrence is found has some formal protection as a conservation property owned by Foothills Conservancy of North Carolina.

Additional Topics

DOCUMENTATION

Reference Code	Citation
F15PAD01NCUS	Padgett, J. E. Field survey and field notes from 2015.

VERSION

Version Author	Robinson	**Version Date**	2015-12-18
Transcribed By	Padgett	**Transcription Date**	2015-04-29

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35185
EO Number 304

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Morganton South
Valdese

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Simms Hill/Little River Uplands

Directions Simms Hill: Located in southern Burke County, approximately 1.3 miles southwest of Old NC Highway 18 and north of South Mountains State Park.

SURVEY INFORMATION

EO Rank B? - Possibly good estimated viability **EO Rank Date** 2015-06-01
EO Rank Comment
EO Data Padgett and Kota observed plants at two different locations along west and north-facing slopes in Acidic Cove Forest on 05 May 2015. Estimated population size is 200-250 individuals (Padgett 2015).

Source Feature Identifier 84125
Source Feature Locator Simms Hill/Little River Uplands
Source Feature Descriptor 2015-05-05, Padgett and Kota

Surveyors James Padgett, NCNHP
Andrew Kota, FCNC

Survey Type Qualitative ground survey

Survey Date 2015-05-05 **First Observation Date** 2015-03 **Last Observation Date** 2015-05-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Plants scattered on slopes of Acidic Cove with Kalmia latifolia, Liridendron tulipifera, Acer rubrum, Quercus rubra, Smilax rotundifolia and others.
Min. Elevation 1,400 **feet** **Max. Elevation** 1,540 **feet**
EO Observed Area 5.50 **acres**
Rep Accuracy High **Separation Comments** No known occurrence within 2km.
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private organization	Foothills Conservancy of North Carolina	per. Andrew Kota.

Owner Comments
Management Comments Exotic and invasive species managment in some locations should be considered (Padgett 2015).
Protection Comments This site is afforded protection as part of a conservation site managed by Foothills Conservancy of North Carolina.
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35185

EO Number 304

DOCUMENTATION

Reference Code	Citation
F15PAD01NCUS	Padgett, J. E. Field survey and field notes from 2015.

VERSION

Version Author	Finnegan	**Version Date**	2016-02-29
Transcribed By	JEP	**Transcription Date**	2015-06-01

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35870

EO Number 305 **Parent EO Number** 217

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Washburn Switch Business Park

Directions Cleveland County, Approximately 0.8 miles north of the community of Ora. The Washburn Switch tract is on the south side of Farmville Road (SR 1342), and east of Washburn Switch Road (SR 1313) and the railroad tracks. Plants occur along tributaries to Brushy Creek. Plants were dug up and rescued from three locations (A, B, C) along the tributaries and moved to a wooded transplant site in the southeast corner of the property (see source features). One location, approximately 375 feet southeast of Jordan Drive, was left undisturbed (Riddle 2015).

SURVEY INFORMATION

EO Rank CD - Fair or poor estimated viability **EO Rank Date** 2015

EO Rank Comment

EO Data Riddle observed approximately 70 plants in the northwest corner of the Washburn Switch Business Park tract that were left in place. 23 plants (location A), 68 plants (location B), and 35 plants (location C) (total of 126 plants) were rescued and moved to a wooded transplant site in the southeast corner of the property on September 15 and 16, 2015 (Riddle 2015).

Source Feature Identifier 88442
Source Feature Locator Washburn Switch tract
Source Feature Descriptor 2015; ClearWater Environmental

Source Feature Identifier 88444
Source Feature Locator Washburn Switch (A) +/- 23 rescued plants
Source Feature Descriptor 2015; ClearWater Environmental

Source Feature Identifier 88445
Source Feature Locator Washburn Switch (B) +/- 68 rescued plants
Source Feature Descriptor 2015; ClearWater Environmental

Source Feature Identifier 88446
Source Feature Locator Washburn Switch (C) +/- 35 rescued plants
Source Feature Descriptor 2015; ClearWater Environmental

Source Feature Identifier 88447
Source Feature Locator Washburn Switch tract transplant site
Source Feature Descriptor 2015; ClearWater Environmental

Surveyors Clement Riddle, ClearWater Environmental **Survey Type**

Survey Date 2015-09-16 **First Observation Date** 2015 **Last Observation Date** 2015-09-16

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35870

EO Number 305 **Parent EO Number** 217

Min. Elevation **feet** **Max. Elevation** **feet**

EO Observed Area **acres**

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Local government	Cleveland County	

Owner Comments

Management Comments

Protection Comments

Additional Topics A PCP permit was submitted during summer 2015 to rescue and move plants to the Broad River Greenway, many miles away. A solution was found to tranplant plants within the property, near an existing Hexastylis naniflora population, which precluded the need for a state permit (Mara Alexander 2015).

DOCUMENTATION

Reference Code	Citation
F15CON01NCUS	2015. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

VERSION

Version Author Robinson **Version Date** 2016-02-02

Transcribed By Robinson **Transcription Date** 2015-09-03

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35871
EO Number 306

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Statesville East

County Name
Iredell (NC)

Watershed
03040102 - South Yadkin

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Fanjoy Road Site, Statesville

Directions Eastern Iredell County, approximately 0.3 miles north of Hwy 70, 0.15 miles east of Fanjoy Road, along north/northeast facing slopes in the headwaters of an unnamed tributary to Fourth Creek, upstream of an 8-acre pond on site (Campbell 2015).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2015
EO Rank Comment D-rank based on current rank specs, there are less than 100 clumps in a fragmented landscape (Robinson 2015).
EO Data Campbell observed at least 75 individuals confined to one area of north/northeast facing slopes above a wetland-stream complex (Campbell 2015).

Source Feature Identifier 88449
Source Feature Locator Fanjoy Road site
Source Feature Descriptor Campbell; 2015

Surveyors David Campbell, HARP **Survey Type** Qualitative ground survey
Survey Date 2015 **First Observation Date** 2015 **Last Observation Date** 2015
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code **Citation**
U15CAM01NCUS Cambell, David. Inventory Report on the Fanjoy Road Site in Statesville, Iredell County, North Carolina. August 11, 2015.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 35871

EO Number 306

VERSION

Version Author	Robinson	**Version Date**	2015-09-04
Transcribed By	Robinson	**Transcription Date**	2015-09-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36095
EO Number 307

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Boiling Springs North
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
First Broad River: Beaverdam Creek tributaries Parent EO

Directions First Broad River: Beaverdam Creek tributaries. This is a parent EO for sub EOs 36, 187, 188, and 189. Occurrences are approximately 5 km west of Shelby, north of Hwy 74, east of Washburn Switch Road (SR 1313), and west of Westlee Street (SR 1319); along tributaries to Beaverdam Creek (Robinson 2015).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2006-04-06
EO Rank Comment
EO Data See each subEO for specific information.

Source Feature Identifier 88699
Source Feature Locator First Broad River: Beaverdam Creek tributaries
Source Feature Descriptor Parent EO 307

Surveyors **Survey Type**
Survey Date 2006-04-06 **First Observation Date** 1997-06-04 **Last Observation Date** 2006-04-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** Areas in between the subEOs have not been well surveyed and could have suitable habitat and additional plants.

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy Medium **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas NC Department of Transportation Mitigation Site

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code **Citation**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36095
EO Number 307

VERSION

Version Author	Robinson	**Version Date**	2015-10-14
Transcribed By	Robinson	**Transcription Date**	2015-10-14

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36541
EO Number 308

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Millersville

County Name
Alexander (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Glade Creek, Alexander County
NCDOT TIP No. B-5391

Directions Alexander County, along Glade Creek, near the DOT Bridge #139 on County Home Road (SR 1609), approximately 0.8 miles northeast of Millersville, NC in south-central Alexander County (Smith 2014).

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2017-03-07

EO Rank Comment Rank specs followed: "Populations in disturbed habitat are considered at risk, with relatively poor viability (C or D)." C-rank given due to high number of individuals (Mason 2017).

EO Data See Additional Topics for information regarding impacts to this occurrence due to bridge replacement. **2017:** Estimated 2,456 H. naniflora individuals counted over 2.57 acres at 7 locations (sites 5 and 6 have been combined) on 27 February and 01 and 07 March 2017 by Axiom Environmental biologists: Site 1: 81 individuals in 0.4 acres; Site 2: 154 individuals in 0.16 acres; Site 3: 76 individuals in 0.07 acres; Site 4: 55 individuals in 0.04 acres; Site 5/6: 1,973 individuals in 2.17 acres; Site 7: 41 indivuals in 0.03 acres; Site 8: 76 indivuals in 0.06 acres. Note that a total of 4,912 individuals of Hexastylis species were counted and 50% assumed to be H. nanilfora (NCDOT 2017 Biological Assessment). **2015:** In May 2015, Axiom Environmental biologists did not observe any indiviudals within the disturbed portion of Site 5 (NCDOT 2017 Biological Assessement). Axiom Environmental biologists observed significant damage and disturbance to Site 5 (the large central part of the population) on 27 March 2015. Approximately 75-95% of plants in site 5 appear to be covered by debris or destroyed by clearing and construction of an access road to the floodplain of Glade Creek (Axiom Environmental 2015). **2014:** Estimated 1,366 H. naniflora plants counted over 2.45 acres by Smith, Davis, Jernigan, and Perkinson on 04 August 2014 in 8 separate locations: Site 1: 77 individuals in 0.4 acres; Site 2: 128 individuals in 0.16 acres; Site 3: 74 individuals in 0.07 acres; Site 4: 50 individuals in 0.04 acres; Site 5: 947 individuals in 2.08 acres; Site 6: No information provided; Site 7: 38 indivuals in 0.02 acres; Site 8: 49 indivuals in 0.04 acres. Note that a total of 2,732 individuals of Hexastylis species counted and 50% assumed to be H. nanilfora (Smith 2014, NCDOT 2017 Biological Assessment). **2013:** Plants observed [no count reported] by Axiom Environmental biologists at 8 locations occupying 1.81 acres on 10 April 2013 (NCDOT 2017 Biological Assessment).

Source Feature Identifier 89692
Source Feature Locator Glade Creek, DOT site 5; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Source Feature Identifier 89693
Source Feature Locator Glade Creek, DOT site 7; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Source Feature Identifier 89694
Source Feature Locator Glade Creek, DOT site 8; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Source Feature Identifier 89695
Source Feature Locator Glade Creek, DOT site 2; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36541
EO Number 308

Source Feature Identifier 89696
Source Feature Locator Glade Creek, DOT site 1; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Source Feature Identifier 89697
Source Feature Locator Glade Creek, DOT site 3; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Source Feature Identifier 89698
Source Feature Locator Glade Creek, DOT site 4; TIP B-5391, Bridge #139
Source Feature Descriptor 2014, NCDOT

Source Feature Identifier 107218
Source Feature Locator Proposed Transplant Site
Source Feature Descriptor 2017; NCDOT Biological Assessment

Surveyors Alexander P. Smith, Axiom Environmental
Scott Davis, Axiom Environmental
Kenan Jernigan, Axiom Environmental
Phillip Perkinson, Axiom Environmental

Survey Type Qualitative ground survey

Survey Date 2017-03-07 **First Observation Date** 2013-04-10 **Last Observation Date** 2017-03-07

Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** Plants may extend beyond the survey boundary.

DESCRIPTION

General Description Site 1: Soils are mapped Fairview sandy loam, 15 to 25 percent slopes. Natural Communities occupied by this site include Mesic Mixed Hardwood Forest: Piedmont Subtype and disturbed/maintained land - most Hexastylis plants occur within 30 feet of the roadside wood-line. The Mesic Mixed Hardwood Forest provides medium quality habitat (generally appropriate vegetation, though of somewhat low diversity, some soils are disturbed from road installation), and maintained/disturbed land provides excessive sunlight and disturbed soils, providing low quality habitat. Associated species: Forest- Canopy: Fagus grandifolia, Quercus alba; Sub-canopy: Oxydendron arboreum, Carpinus caroliniana, Kalmia latifolia, Acer rubrum; Shrub: C. caroliniana, O. arboreum. Herb/vine: Smilax rotundifolia, Toxicodendron radicans, Viola hastate, Hexastylis heterophylla; Roadside- O. arboreum, C. caroliniana, S. rotundifolia (Smith 2014).

Min. Elevation 3,232 **feet** **Max. Elevation** **feet**
EO Observed Area 6.70 **acres**
Rep Accuracy High **Separation Comments**
General Comments: Hexastylis heterophylla co-occurs with H. naniflora at this location.

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Private individual	J.B Cox & T.M. Cox, 1886 County Home Road, Taylorsville, NC	

Owner Comments Plants fall partially on DOT right-of-way and private ownership (Cox property).
Management Comments
Protection Comments This population was significantly damaged in early 2015 or late 2014 by the construction of an access road going through the largest part of the population (Axiom Environmental 2015).
Protection / management needs and opportunities: A narrow stretch of natural forest is bounded to each side by maintained road shoulder/utility line right-of-way and a residential yard.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36541

EO Number 308

Additional Topics Total adverse effects expected to occur to this occurrence in association with NCDOT TIP No. B-5391 along Alternative 1 are: 131 plants and 0.129 acre of occupied habitat: 2 individuals and 0.001 acre of habitat at Site 1; 10 individuals and 0.005 acre of habitat due to construction equipment access at Site 1; and 119 individuals and 0.123 acre of habitat at Site 2. Twenty-four individuals will be transplanted to a protected area onsite (NCDOT 2017 - Project Commitments "Green Sheet", NCDOT 2017 Biological Assessment). NCDOT has applied for a permit from NCPCP to relocate individuals to a protected area onsite (NCPCP 2017 - see H naniflora>Permits in NHP files).

DOCUMENTATION

Reference Code	Citation
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.
F14CON01NCUS	2014. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.
G17DOT01NCUS	N.C. Department of Transportation. Biological Assessement: Dwarf-flowered Heartleaf (Hexastylis naniflora); Replacement of Bridge No. 139 on County Home Road (SR 1609) over Glade Creek, Alexander County. TIP B-5931. Prepared by Axiom Environmental, Inc. September 2017.

VERSION

Version Author Robinson **Version Date** 2016-05-10

Transcribed By Robinson **Transcription Date** 2016-05-10

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36589
EO Number 309

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Casar

County Name
Burke (NC)

Watershed
03050102 - South Fork Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name
South Mountains Pleasant Grove Uplands

Survey Site
South Mountains Pleasant Grove Uplands

Directions South Mountains Pleasant Grove Uplands: Burke County, headwaters of a tributary to Little River, approximately 1 mile west of the intersection of Baptist Camp Road and Old NC 18 (SR 1924). 0.8 miles southeast of Butler Knob and 1.0 mile northwest of Brushy Knob.

SURVEY INFORMATION

EO Rank D? - Possibly poor estimated viability **EO Rank Date** 2016-05-06
EO Rank Comment
EO Data Sean Bloom obsered a few plants along the slope on 06 May 2016, entire area not thoroughly surveyed (Bloom 2016).

Source Feature Identifier 89787
Source Feature Locator Little River Uplands
Source Feature Descriptor 2016; Bloom

Surveyors Sean Bloom, CLC **Survey Type** Qualitative ground survey
Survey Date 2016-05-06 **First Observation Date** 2016-05-06 **Last Observation Date** 2016-05-06
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** Entire population not surveyed (Bloom 2016).

DESCRIPTION

General Description Found in a Chestnut Oak Forest (Heath Subtype) and Acidic Cove Forest. Quercus montana canopy with Nyssa sylvatica and Oxydendrum arboretum in subcanopy. Very sense shrub layer dominated by Kalmia latifolia. Herbaceous layer was sparse but included Galax urceolata, Medeola virginiana, and Viola hastata (Bloom 2016).
Min. Elevation feet **Max. Elevation** feet
EO Observed Area 1.00 acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36589

EO Number 309

DOCUMENTATION

Reference Code	Citation
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

VERSION

Version Author	Robinson	**Version Date**	2016-07-27
Transcribed By	Robinson	**Transcription Date**	2016-05-31

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36661
EO Number 310 **Parent EO Number** 178

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Valdese
Drexel

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Mcgalliard Creek Slopes; Lake Rhodhiss

Directions South side of Lake Rhodhiss, about half way between the towns of Drexel and Rutherford College; at the northern end of end of Laurel Street (SR 1545) and to the east. Along north-facing slopes, south of Mcgalliard Creek where it meets Lake Rhodhiss on CWMTF Rhodhiss Park tract (Robinson 2016).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-04-05
EO Rank Comment
EO Data Padgett surveyed the Lake Rhodhiss Park tract on 5 April 2016 and estimated 1500-2000 plants (Padgett 2016).

Source Feature Identifier 90067
Source Feature Locator Lake Rhodhiss Park tract
Source Feature Descriptor 2016-04-05; Padgett

Surveyors James Padgett, NCNHP **Survey Type** Qualitative ground survey
Survey Date 2016-04-05 **First Observation Date** 2016-04-05 **Last Observation Date** 2016-04-05
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Mesic Mixed Hardwoods, and mixed pine woodlands (Padgett 2016).
Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area 23.00 **acres**
Rep Accuracy Very High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments This tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016).
Additional Topics

DOCUMENTATION

Reference Code	Citation
F16PAD01NCUS	Padgett, J.E. Field Survey and Field Notes from 2016.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36661

EO Number 310 **Parent EO Number** 178

VERSION

Version Author	Robinson	**Version Date**	2016-07-18
Transcribed By	Robinson	**Transcription Date**	2016-07-18

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36693
EO Number 311

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Fingerville West

County Name
Polk (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Collinsville (Hughes) Creek Slopes

Directions Collinsville (Hughes) Creek Slopes: This occurrence is located in Polk County, North Carolina and occurs along Collinsville (Hughes) Creek on slopes above the creek about 0.3 miles south of SR1521 (Collinsville Road).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-08-04
EO Rank Comment
EO Data 2016: Several hundred up to perhaps 750 clumps observed on 4 August 2016 over 0.5-0.75 acre. Plants and habitat appear in excllent condition (Tuttle 2016).
2015: Occurrence visted by David Campbell, report is pending (Torlina 2016).
2012: Zach Murrell visited the occurrence on 4 March 2012 to collect samples for genetic study funded by NCDOT (Torlina 2016).
2007: present, no data provided (Torlina 2016).

Source Feature Identifier 90155
Source Feature Locator Collinsville (Hughes) Creek Slopes
Source Feature Descriptor 2016; Tuttle

Surveyors Julie Tuttle
Zach Murrell, Appalachian State University
David Campbell
Pam Torlina, Pacolet Conservancy

Survey Type

Survey Date 2016-08-04 **First Observation Date** 2007-11-28 **Last Observation Date** 2016-08-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** Other areas of suitable habitat may occur along Collinsville (Hughes Creek), depending on drainage, microtopography, and land use.

DESCRIPTION

General Description North-facing seepy drainage area that flows into Hughes Creek and adjacent moist slopes as well as flats, slopes, and small drainage cuts scattered along Hughes Creek (Tuttle 2016). Dry-mesic Acidic Heath Bluff community type adjacent to Hughes Creek. Upper slopes display good quality examples of mature Virginia Pine with Mountain Laurel, Sourwood, and Dwarf Pawpaw. A seepage area contains a sizeable population of Dwarf-flowered Heartleaf, with Virginia Sweetspires and Small Green Wood Orchid. Lower slopes have many small areas of seepage with patches of Sphagnum, Netted Chain Fern, and American Royal Fern. During a site visit, female Diana Fritillaries were observed ovipositing on Tall White Violet. (D. Cambell from Torlina 2016).

Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres

Rep Accuracy High

Separation Comments EO is not located within 1.0 kilometers of another known EO of the same species. Unsuitable habitat occurs between this and the next nearest occurrence.

General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36693

EO Number 311

OWNERSHIP

Managed Areas Pacolet Area Conservancy Easement

Owner Type	Owner Name	Notes
Private individual	Charles and Jackie Harris	2016

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

VERSION

Version Author Amoroso **Version Date** 2016-08-19

Transcribed By Amoroso **Transcription Date** 2016-08-19

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36696
EO Number 312

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Rutherfordton South

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Richardson Creek tributary above Toms Lake

Directions Richardson Creek tributary above Toms Lake: This occurrence is located along an unnamed tributary to Richardson Creek that is dammed for a farm pond and a fishing pond called Toms Lake and is about 0.1 mile south of SR 1139 (Toms Lake Road).

SURVEY INFORMATION

EO Rank A - Excellent estimated viability **EO Rank Date** 2016-08-03
EO Rank Comment
EO Data 2016: Several thousands of clumps estimated, plants and habitat appear in excellent condition on 3 August 2016 (Tuttle 2016).
2015: Site visit (Torlina 2016).
2013: Plants in flower (Torlina 2016).
2006: Presence noted (Torlina 2016).

Source Feature Identifier 90154
Source Feature Locator Richardson Creek tributary above Toms Lake
Source Feature Descriptor 2016: Tuttle

Surveyors Pam Torlina, Pacolet Area Conservancy
Julie Tuttle
Bob and Linda Allard, landowners

Survey Type Qualitative ground survey

Survey Date 2016-08-03 **First Observation Date** 2006-11-14 **Last Observation Date** 2016-08-03
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments** The population extends northeast from the northeast boundary of the property in the drainage network, so the area of suitable habitat here may be another 1-2 acres, depending on current land use and microtopography on the adjacent property (Tuttle 2016).

DESCRIPTION

General Description Moist confluence of a network of intermittent/underground, small drainage areas within Dry-Mesic Oak-Hickory Forest (Piedmont Subtype). The focal area where the population occurs consists of numerous narrow, relatively shallow drainage channels with associated drainage depressions/pits and more open surrounding "slopes". Clumps are most frequent along the edges of the drainage depressions and immediately adjacent but also extent onto the surrounding open slopes. Habitat quality is excellent. Adjacent upland areas on the property are more disturbed, with more abundant pine and smaller average tree diameter. Overall average tree diameter is 12-18", and many large trees are present, primarily Quercus alba (maximum 36-40" and many 24") but other species as well. Note: Pam Torlina's description includes Fagus grandifolia as a significant component of the forest; my survey was casual and this species was most likely present, but I did not observe it as abundant or co-dominant.(Tuttle 2016) Mesic Mixed Hardwood Forest. Major associated tree species include Liriodendron tulipifera, Quercus spp., Fagus grandiflolia, and Acer rubrum with an understory of Ilex opaca and Cornus florida, with shrubs including Vaccinium sp., and herbs including Viola spp., Hexastylis spp., and more (Torlina 2016).

Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36696

EO Number 312

Rep Accuracy High **Separation Comments** EO is located within 2.0 kilometers of another known EO of the same species, however it is separated by unsuitable habitat.

General Comments: Invasive species observed: Ligustrum sinense (rare), Microstegium vimineum (abundant in places but not dominant), Rosa multiflora (1 individual), Lonicera japonica (not abundant), and Magnolia grandiflora (1 individual) (Tuttle 2016).

OWNERSHIP

Managed Areas Pacolet Area Conservancy Preserve

Owner Type	Owner Name	Notes
Private individual	Allard	2016

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

Specimen

Herb.NCU Tuttle s.n.

VERSION

Version Author Amoroso **Version Date** 2016-08-23

Transcribed By Amoroso **Transcription Date** 2016-08-23

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36701

EO Number 313 **Parent EO Number** 295

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
NCDOT TIP U-4700 US 321 corridor

Directions

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2012

EO Rank Comment

EO Data 2012: GPS points with file date of 2012 submitted by NCDOT with rare plant form pending (2016).

Source Feature Identifier 90168

Source Feature Locator NCDOT TIP U-4700 US 321 corridor

Source Feature Descriptor 2012, NCDOT

Surveyors

Survey Type

Survey Date 2012 **First Observation Date** 2012 **Last Observation Date** 2012

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High

Separation Comments All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36701

EO Number 313 **Parent EO Number** 295

VERSION

Version Author	Amoroso	**Version Date**	2016-08-25
Transcribed By	Amoroso	**Transcription Date**	2016-08-25

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36703

EO Number 314 **Parent EO Number** 295

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Granite Falls

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
NCDOT TIP U-4700

Directions NCDOT TIP U-4700: This occurrence is located on the north side of the Catawba River in the US 321 corridor near its intersection with SR 1758.

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2012

EO Rank Comment

EO Data 2012: report from NCDOT pending

Source Feature Identifier 90172

Source Feature Locator NCDOT TIP U-4700 US 321 corridor

Source Feature Descriptor 2012, NCDOT

Surveyors **Survey Type**

Survey Date 2012 **First Observation Date** 2012 **Last Observation Date** 2012

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High **Separation Comments** All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

General Comments:

OWNERSHIP

Managed Areas

Owner Type **Owner Name** **Notes**

Owner Comments

Management Comments

Protection Comments

Additional Topics

DOCUMENTATION

Reference Code	Citation
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 36703

EO Number 314 **Parent EO Number** 295

VERSION

Version Author	Amoroso	**Version Date**	2016-08-26
Transcribed By	Amoroso	**Transcription Date**	2016-08-26

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37214

EO Number 315 **Parent EO Number** 316

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem Not processed per agreem Not processed per agreem **Longitude** Not processed per agreem Not processed per agreem

Site Name

Survey Site
NCDOT TIP No. R-3603A
NC-127/Cloninger Mill Road (Sub EO of EO 316)

Directions NC-127/Cloninger Mill Road. "On wooded slope, east of N.C. Route 127, approximately 800 feet south of intersection of N.C. Route 127 and Cloninger Mill Road [SR-1400]. Population is approximately 100 feet into forested area." (Smail 2016).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2017-05-02

EO Rank Comment

EO Data 2017: About 60 clumps, in flower, observed by J. Mason et al. on 02 May 2017; entire population surveyed (J. Mason 2017, pers. comm. with S. Mason 2017).2016: Partial survey - about 20 clumps, in flower, observed by Smail on 05 May 2016; population occurrs over approximatley 2,500 sq ft (Smail 2016).

Source Feature Identifier 100633
Source Feature Locator NC-127/Cloninger Mill Road
Source Feature Descriptor 2016-05-05; E.J. Smail; 20 clumps - partial survey

Source Feature Identifier 100634
Source Feature Locator NC-127/Cloninger Mill Road
Source Feature Descriptor 2017-05-02; J. Mason (NCDOT) et al.; about 60 clumps

Surveyors Edward J. Smail, Michael Baker International
Jim Mason, NCDOT
Bill Barrett, NCDOT
Jeff Hemphill, NCDOT

Survey Type

Survey Date 2017-05-02 **First Observation Date** 2016-05-05 **Last Observation Date** 2017-05-02

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description DRY-MESIC OAK–HICKORY FOREST (PIEDMONT SUBTYPE); Fairview soils; North facing slope; mid-slope, dry, closed canopy. Associated species: *Fagus grandifolia*, *Acer rubrum*, *Quercus alba*, *Carya tomentosa* (Smail 2016).

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas Catawba County Open Space

Owner Type	Owner Name	Notes
Local government	City of Hickory	

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37214

EO Number 315 **Parent EO Number** 316

Owner Comments

Management Comments

Protection Comments

Additional Topics This occurrence is in the study area for NCDOT TIP No. R-3603A.

DOCUMENTATION

Reference Code	Citation
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.
F17DOT01NCUS	N.C. Department of Transportation. 2017. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2017.

VERSION

Version Author Mason **Version Date** 2017-05-16

Transcribed By Mason **Transcription Date** 2017-05-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37215
EO Number 316

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Catawba (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Northern Catawba County: Parent EO

Directions Northern Catawba County: Parent EO. This is a parent EO of sub EOs 273 and 315, located in drainages on the south side of the Catawba River. See sub EOs for details.

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2017-05-02
EO Rank Comment Rank based on sub EOs, when taken together.
EO Data This is a parent EO; see each sub EO for details.

Source Feature Identifier 100636
Source Feature Locator
Source Feature Descriptor Northern Catawba County: Parent EO

Surveyors **Survey Type**
Survey Date 2017-05-02 **First Observation Date** 2006-09 **Last Observation Date** 2017-05-02
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas Catawba County Open Space

Owner Type **Owner Name** **Notes**

Owner Comments
Management Comments
Protection Comments
Additional Topics

DOCUMENTATION

Reference Code **Citation**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37215

EO Number 316

VERSION

Version Author	Mason	**Version Date**	2017-05-16
Transcribed By	Mason	**Transcription Date**	2017-05-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37216
EO Number 317

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Bethlehem

County Name
Alexander (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Southern Alexander County - Catawba River: NC-127/Chigger Ridge Road
NCDOT TIP No. R-3603A

Directions Southern Alexander County - Catawba River: NC-127/Chigger Ridge Road. "On wooded slope, east of N.C. Route 127, on wooded slope at the intersection of N.C. Route 127 and Chigger Ridge Road [SR-1139]. Population is located approximately 50 feet into forested area." (Smail 2016).

SURVEY INFORMATION

EO Rank D - Poor estimated viability **EO Rank Date** 2017-05-02
EO Rank Comment DRY-MESIC OAK–HICKORY FOREST (PIEDMONT SUBTYPE); Hibriten soils; North facing slope; mid-slope, dry, closed canopy. Associated species: *Fagus grandifolia*, *Kalmia latifolia, Acer rubrum*, *Quercus alba*, *Carya tomentosa. Illex opaca, Pinus virginiana* (Smail 2016).
EO Data 2017: About 30 clumps, in flower, observed by J. Mason et al. on 02 May 2017; entire population surveyed (J. Mason 2017, pers. comm. with S. Mason 2017).2016: Partial survey - about 20 clumps, in flower, observed by Smail on 05 May 2016; population occurrs over approximatley 2,500 sq ft (Smail 2016).

Source Feature Identifier 100632
Source Feature Locator NC-127/Chigger Ridge Road
Source Feature Descriptor 2016-05-05; E.J. Smail; 20 clumps - partial survey

Source Feature Identifier 100635
Source Feature Locator NC-127/Chigger Ridge Road
Source Feature Descriptor 2017-05-02; J. Mason (NCDOT) et al.; 30 clumps

Surveyors Edward J. Smail, Michael Baker International
Jim Mason, NCDOT
Bill Barrett, NCDOT
Jeff Hemphill, NCDOT

Survey Type

Survey Date 2017-05-02 **First Observation Date** 2016-05-05 **Last Observation Date** 2017-05-02
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37216

EO Number 317

Owner Type	Owner Name	Notes

Owner Comments

Management Comments

Protection Comments

Additional Topics This occurrence is in the study area for NCDOT TIP No. R-3603A.

DOCUMENTATION

Reference Code	Citation
F17DOT01NCUS	N.C. Department of Transportation. 2017. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2017.
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.

VERSION

Version Author Mason **Version Date** 2017-05-16

Transcribed By Mason **Transcription Date** 2017-05-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37217
EO Number 318

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Longview

County Name
Burke (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per ag Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem Not processed per agreem

Site Name

Survey Site
Burke County - Drowning Creek UT
NCDOT TIP No. B-4447

Directions Burke County - Drowning Creek UT. Located in the headwaters area of an unnamed tributary of Drowning Creek, on both sides of I-40 in the vicinity of the I-40 crossing of Berea Church Road [SR-1758] [derived from locations of features in shapefile].

SURVEY INFORMATION

EO Rank C - Fair estimated viability **EO Rank Date** 2017-04
EO Rank Comment
EO Data 2017: 356 plants total at six locations observed by Carolina Ecosystems biologists in April 2017; 230 of the plants are within the NCDOT right-of-way fence (J. Mason NCDOT 2017).

Source Feature Identifier 100637
Source Feature Locator I-40 - north side: population A
Source Feature Descriptor 2017-04; Carolina Ecosystems; 15 plants

Source Feature Identifier 100638
Source Feature Locator I-40 - north side: population B
Source Feature Descriptor 2017-04; Carolina Ecosystems; 5 plants

Source Feature Identifier 100639
Source Feature Locator I-40 - north side: population C
Source Feature Descriptor 2017-04; Carolina Ecosystems; 14 plants

Source Feature Identifier 100640
Source Feature Locator I-40 - north side: population D
Source Feature Descriptor 2017-04; Carolina Ecosystems; 274 plants

Source Feature Identifier 100641
Source Feature Locator I-40 - south side: population E
Source Feature Descriptor 2017-04; Carolina Ecosystems; 45 plants

Source Feature Identifier 100642
Source Feature Locator I-40 - south side: no population designation
Source Feature Descriptor 2017-04; Carolina Ecosystems; 3 plants

Surveyors Carolina Ecosystems biologists **Survey Type**
Survey Date 2017-04 **First Observation Date** 2017-04 **Last Observation Date** 2017-04
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37217
EO Number 318

DESCRIPTION

General Description
Min. Elevation feet **Max. Elevation** feet
EO Observed Area acres
Rep Accuracy High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics Plants are located in the study area and NCDOT right-of-way for TIP No. B-4447.

DOCUMENTATION

Reference Code	Citation
F17DOT01NCUS	N.C. Department of Transportation. 2017. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2017.

VERSION

Version Author Mason **Version Date** 2017-05-16
Transcribed By Mason **Transcription Date** 2017-05-16

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37915

EO Number 319 **Parent EO Number** 99

SUMMARY

Common Name Dwarf-flowered Heartleaf

Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Chesnee

County Name
Rutherford (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Broad River: Big Horse Creek - West of US-221 (Sub EO of EO 099)
NCDOT TIP No. R-5522

Directions Broad River: Big Horse Creek - West of US-221 (Sub EO of EO 099). West of US-221, north of SR-1133, south and east of railroad tracks, along south side of small farm pond (NCDOT 2012).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2012-04-09

EO Rank Comment

EO Data 2012: Observed and GPSed by NCDOT biologists but no count made on 09 April 2012; first observed by NCDOT et al. on 28 February 2012 but no count made during survey of NCDOT project limits as occurrence is located outside of project area (NCDOT 2012).

Source Feature Identifier 109526

Source Feature Locator R-5522 - outside of project boundary

Source Feature Descriptor 2012-04-09; NCDOT; present, no count made

Surveyors Marella Buncick, USFWS
Logan Williams, NCDOT
Karen Kendig, NCDOT
Bill Barrett, NCDOT
Jennifer Harrod, NCDOT
Roger Bryan, NCDOT
Brandon Fulton, STV/Ralph Whitehead Assoc

Survey Type

Survey Date 2012-04-09 **First Observation Date** 2012-02-28 **Last Observation Date** 2012-04-09

Data Sensitive Element N **Comments**

Monitoring Needs Comments

Research Needs Comments

Research Needs Comments

Additional Inventory Needed N **Comments**

DESCRIPTION

General Description

Min. Elevation feet **Max. Elevation** feet

EO Observed Area acres

Rep Accuracy Very High **Separation Comments**

General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes
Corporation	Horsehead Corporation (as of 2012)	

Owner Comments The Horsehead Corporation is placing a conservation easement on the area of the population, ensuring that this area will not be developed (NCDOT 2012).

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37915

EO Number 319 **Parent EO Number** 99

Management Comments

Protection Comments

Additional Topics This occurrence was located outside of the project limits of NCDOT TIP No. R-5522; however, the project was redisigned to convey drainage away from the occurrence, avoiding any hydraulic erosion concerns (NCDOT 2012).

DOCUMENTATION

Reference Code	Citation
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.

VERSION

Version Author	Mason	**Version Date**	2018-01-04
Transcribed By	Mason	**Transcription Date**	2018-01-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37916
EO Number 320

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Shelby

County Name
Cleveland (NC)

Watershed
03050105 - Upper Broad

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
Hickory Creek - Unnamed Tributary (Shelby High School)
NCDOT TIP No. U-2567

Directions Hickory Creek - Unnamed Tributary (Shelby High School). South of US-74 Bypass, east of Academy Street, north of Textile Drive (Shely High School), on northeast-facing slope on south side of unnamed tributary to Hickory Creek; plants restricted to the lower third of the slope and occurred 8-15 feet upslope from the right descending bank (Three Oaks via NCDOT 2018).

SURVEY INFORMATION

EO Rank E - Verified extant (viability not assessed) **EO Rank Date** 2016-06-10
EO Rank Comment
EO Data 2016: 15 plants over 0.031 acres counted by Three Oaks biologists on 10 June 2016 (Three Oaks via NCDOT 2018).

Source Feature Identifier 109560
Source Feature Locator Hickory Creek Unnamed Tributary
Source Feature Descriptor 2016-06-10; Three Oaks; 15 plants in 0.031 acres

Surveyors Three Oaks biologists **Survey Type**
Survey Date 2016-06-10 **First Observation Date** 2016-06-10 **Last Observation Date** 2016-06-10
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description A northeast-facing mixed hardwood slope on the south side of an unnamed tributary to Hickory Creek. The hardwood ridge supporting this small population of dwarf-flowered heartleaf contains several invasive exotic plant taxa. These non-native plants are well-established and seem to be densest to the west and east of the dwarf-flowered heartleaf population. The invasive exotic plants on this slope are an immediate threat to the prolonged presence of this heartleaf population (Three Oaks via NCDOT 2018).

Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area **acres**
Rep Accuracy Very High **Separation Comments**
General Comments:

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37916

EO Number 320

DOCUMENTATION

Reference Code	Citation
F18DOT01NCUS	N.C. Department of Transportation. 2018. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2018.

VERSION

Version Author	Mason	**Version Date**	2018-01-04
Transcribed By	Mason	**Transcription Date**	2018-01-04

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37929
EO Number 321

SUMMARY

Common Name Dwarf-flowered Heartleaf
Federal Protection Status LT **State Protection Status** T **Global Rank** G3 **State Rank** S3

DIRECTIONS

Nation US **State** North Carolina

USGS Quad Name
Granite Falls

County Name
Caldwell (NC)

Watershed
03050101 - Upper Catawba

Latitude Not processed per agreem **Longitude** Not processed per agreem

Site Name

Survey Site
NCDOT TIP No. U-4700
Gunpowder Creek: South of Hudson

Directions Gunpowder Creek, Caldwell County. Plants located southeast of the community of Hudson, on east and west sides of US-321, along Gunpowder Creek, its tributaries, and drains. See source features for details.

SURVEY INFORMATION

EO Rank B - Good estimated viability **EO Rank Date** 2012-spring
EO Rank Comment Large number of individuals in total but they occur in small patches of forest that are surrounded by agriculture or development.

EO Data **2012:** 2,475 H. naniflora plants total counted at sites 30, 32, 34, 34B, 35, 35B, 35C, 35D, 36, and 37 by NCDOT biologists in the spring of 2012; 2,494 Hexastylis plants total observed at these sites but 50% at site 30 were determined not to be H. naniflora (NCDOT 2018).**2009:** 2,704 Hexastylis plants total counted by Dustin and NCDOT biologists at sites 30, 32, 34, 35, 36, and 37 on 08 July 2009, 21 September and 22 September 2009; in 2012 all sites except site 30 were determined by NCDOT biologists to be 100% H. naniflora; only 50% H. naniflora observed at site 30 (NCDOT 2018).

Source Feature Identifier 109617
Source Feature Locator US-321/U-4700: Site 30
Source Feature Descriptor 2009-09-21; NCDOT (2018); 19 H. naniflora plants over 0.10 acres - 38 Hexastylis plants total but 50% not H. naniflora

Source Feature Identifier 109618
Source Feature Locator US-321/U-4700: Site 32
Source Feature Descriptor 2012-Spring; NCDOT (2018); 167 plants (100% H. naniflora)

Source Feature Identifier 109619
Source Feature Locator US-321/U-4700: Site 34 [Dustin]
Source Feature Descriptor 2009-09-21; NCDOT (2018); 1,266 plants over 1.21 acres

Source Feature Identifier 109620
Source Feature Locator US-321/U-4700: Site 34B [NCDOT]
Source Feature Descriptor 2012-spring; NCDOT (2018); 929 individuals (100% H. naniflora)

Source Feature Identifier 109621
Source Feature Locator US-321/U-4700: Site 34 [NCDOT]
Source Feature Descriptor 2012-spring; NCDOT (2018); 78 plants (100% H. naniflora)

Source Feature Identifier 109801
Source Feature Locator US-321/U-4700: Site 35B [NCDOT]
Source Feature Descriptor 2012-spring; NCDOT (2018); 151 individuals (100% H. naniflora)

Source Feature Identifier 109802
Source Feature Locator US-321/U-4700: Site 35 [NCDOT]
Source Feature Descriptor 2012-spring; NCDOT (2018); 108 individuals (100% H. naniflora)

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37929
EO Number 321

Source Feature Identifier 109804
Source Feature Locator US-321/U-4700: Site 35 [Dustin]/Site 35C and D [NCDOT map]
Source Feature Descriptor 2009-09-21; NCDOT (2018); 49 plants over 0.11 acres

Source Feature Identifier 109805
Source Feature Locator US-321/U-4700: Site 35 [Dustin]/Site 35D [NCDOT map]
Source Feature Descriptor 2012-spring; NCDOT (2018); 7 individuals (100% H. naniflora)

Source Feature Identifier 109806
Source Feature Locator US-321/U-4700: Site 35C [NCDOT]
Source Feature Descriptor 2012-spring; NCDOT (2018); 42 individuals (100% H. naniflora)

Source Feature Identifier 109807
Source Feature Locator US-321/U-4700: Site 36
Source Feature Descriptor 2009-09-21; NCDOT (2018); 763 individuals over 1.04 acres (100% H. naniflora)

Source Feature Identifier 109808
Source Feature Locator US-321/U-4700: Site 37
Source Feature Descriptor 2009-09-22; NCDOT (2018); 221 plants H. naniflora plants over 0.50 acres - 421 Hexastylis plants total but 50% not H.

Source Feature Identifier 140794
Source Feature Locator US-321/U-4700: Site 30
Source Feature Descriptor 2012-Spring; NCDOT (2018); 19 H. naniflora plants - 38 Hexastylis plants total but 50% not H. naniflora

Source Feature Identifier 140795
Source Feature Locator US-321/U-4700: Site 32 [Dustin]
Source Feature Descriptor 2009-07-08; NCDOT (2018); 167 plants (100% H. naniflora) over 0.22 acres

Source Feature Identifier 140796
Source Feature Locator Locator US-321/U-4700: Site 36
Source Feature Descriptor 2012-Spring; NCDOT (2018); 763 individuals (100% H. naniflora)

Source Feature Identifier 140797
Source Feature Locator Locator US-321/U-4700: Site 37
Source Feature Descriptor 2012-Spring; NCDOT (2018); 221 plants H. naniflora plants - 421 Hexastylis plants total but 50% not H. naniflora

Surveyors **Survey Type**
Survey Date 2012-Spring **First Observation Date** 2009-09-21 **Last Observation Date** 2012-Spring
Data Sensitive Element N **Comments**
Monitoring Needs Comments
Research Needs Comments
Research Needs Comments
Additional Inventory Needed N **Comments**

DESCRIPTION

General Description Wooded areas with the study area are fragmented by heavy human alteration and are best described as Mesic mixed Hardwood Forests, occurring on Pacolet fine sandy loam soils. Associated species: Ilex opaca, Prunus serotina, Rubus argutus, Ligustrum sinense, Cornus florida, Smilax rotundifolia, Carya spp., Lonicera japonica, Kalmia latifolia, Vitis rotundifolia, Quercus rubra, Toxicodendron radicans, Quercus falcata, Acer rubrum, Oxydendrum arboreum, Pinus virginiana, Quercus alba, Pinus strobus, Liriodendron tulipifera, Polystichum acrostichoides (Dustin field form in NCDOT 2018).

Min. Elevation **feet** **Max. Elevation** **feet**
EO Observed Area **acres**
Rep Accuracy High **Separation Comments**
General Comments:

Element Occurrence Report

Scientific Name *Hexastylis naniflora* **EO ID** 37929
EO Number 321

OWNERSHIP

Managed Areas

Owner Type	Owner Name	Notes

Owner Comments
Management Comments
Protection Comments
Additional Topics Sites 30, 32, 34, 34B, 35, 35B, 35C, 35D, 36, and 37 within project study area of NCDOT TIP No. U-4700 (NCDOT 2018).

DOCUMENTATION

Reference Code	Citation
F18DOT02NCUS	N.C. Department of Transportation. 2018. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2018 for NCDOT TIP No. U-4700. Documents and files are from various years including 2009 and 2012 but were supplied to NCNHP in 2018.

VERSION

Version Author Mason **Version Date** 2018-01-11
Transcribed By Mason **Transcription Date** 2018-01-11

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
1.000	D	Brushy Creek Bluff	100 200	2001	2001	Clev	N	
8.000	D	First Broad River: Knob Creek	< 20	2002	2000	Clev	N	
11.000	X	South Fork Catawba River: Henry Fork, Pleasant Grove	0	1981	1995	Burk	N	
15.000	E	Mount Zion Heartleaf Forest	unk	2000	2000	Linc	N	Presence noted, no plant count.
23.000^	A	Mill Creek Forest and Seep	1,733	2016	2015	Polk	N	NHP Comp Review and Mont Report.
25.000	U	Hildebran/Henry River Slopes	20	1985	1985	Burk	N	Identity of plants under question, no confirmation of HENA.
27.000	U	South Fork Catawba River: Henry Fork, Prospect Ridge	unk	1991	1991	Burk	N	Identity of plants under question, no confirmation of HENA.
29.000^	A	Island Creek Heath Bluff	50,541	2016	2016	Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
31.000*^	C?	NCDOT TIP: R-2824	1,062	2010	2001	Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
32.000*	D	NCDOT TIP R-2824	457	2013	2011	Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
33.000	CD	Catawba River: Trib to Rhodhiss Lake	275	1996	1996	Burk	N	Owner, Burke County Public Works. At landfill.
44.000*^	AB	Little Gunpowder Creek Rare Plant Site 1	617	2015	2011	Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
48.000	D	Catawba River: Lippard Creek tributary	> 40	1999	1999	Linc	N	
57.000	C	Second Broad River: Marrow Creek	> 300	2001	2001	Ruth	N	
58.000	D	Soutuh Fork Catawba River: Camp Creek	25 50	2002	2002	Cata	N	
59.000	C	Third Creek Rare Plant Site	< 200	2010	2010	Alex	N	Part of the population lies within the NCDOT roadway corridor for U. S. Highway 64. No formal protection.
64.000	U	Beaverdan Creek NA	< 500	2002	2002	Clev	N	ID needs confirmation.
70.000	D	Hicks Hill Bluffs and Forests	100 200	2002	2002	Clev	N	ID needs confirmation.
71.000	BC	Knob Creek NA	300	2005	2005	Clev	N	
77.000*	CD	Little Gunpowder Creek Rare Plant Site 2	699	2013	2007	Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
85.000	D	Buffalo Creek: northeast of SR 1903	267	2005	2005	Clev	N	EO is associated with NC DOT project B-3828. No impact planned. No formal protection.
87.000	D	Catawba River: Lower Creek: Miller Creek	0	2011	2011	Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
89.000	U	South Fork Catawba River: Jacob Fork, Whitener Crk	200	2003	2003	Burk	N	
92.000	BC	Second Broad River: Webb Creek headwater	200 400	2003	2003	Ruth	N	
93.000	D	West Shelby Mesic Slope		2005	2005			Parent EO
93.034	D	West Shelby Mesic Slope	60	2005	2005	Clev	N	
93.035	D	First Broad River: Brushy Creek	< 100	2016	2001	Clev	N	8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.
96.000	A	Murrays Mill/Upper Balls Creek NA		2013	2010			Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
96.038^	CD	Catawba River: Deal Property	100 200	1996	1996	Cata	N	

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
96.039^	D	Murrays Mill/Upper Balls Creek NA	< 50	2002	2002	Cata	?	Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)
96.184*^	A	Murrays Mill/Upper Balls Creek NA	11,860	2013	2010	Cata	Y	NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)
97.000	C	Sandy Run/Cliffside NA		2002	2002			Parent EO
97.017	D	Broad River: Sandy Run Creek	50	1996	1996	Clev	N	
97.018	D	Broad River: Sandy Run Creek	< 50	2001	2001	Clev	N	
97.069	U	Sandy Run/Lovelace NA	100	2002	2002	Clev	N	ID needs confirmation.
97.230	D	Sandy Run/Cliffside NA	50 100	2002	2002	Clev	N	
98.000	CD	Cat Square Heartleaf Forest		2012	2001			Parent EO
98.002	X	South Fork Catawba River, Indian Creek	0	1957	1980	Linc	N	Extirpated
98.003	D	Cat Square Heartleaf Forest	160	2001	1995	Linc	N	presence noted in 2001, 160 plants counted in 1995
98.004	CD	Cat Square Heartleaf Forest	200	2001	2001	Linc	N	
98.060	D	NCDOT TIP: B-2119	20 50	2012	2001	Linc	N	EO is associated with NC DOT project B-2119
99.000	A	Big Horse Creek Rare Plant Site	106,940	2015	2015			Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
99.009^	AB	Hensons Creek Natural Area	n/a	2005	2005	Ruth	N	Presence noted in 2012 - no count made, 500 estimate plants in 2005
99.010^	A	Kudzu Farm Rare Plant Site	n/a	2014	2013	Ruth	N	33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.
99.037^	C	Broad River: Hunter Road	n/a	2005	2015	Ruth	N	includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.
99.052^	C	Hensons Creek Natural Area	n/a	2005	2001	Ruth	N	200-300
99.053^	D	Broad River: McKinney Bridge	n/a	2003	2003	Ruth	N	<35
99.055^	AB	Broad River: Richardson Creek	n/a	2016	2015	Ruth	N	included with EO 37. NHP Comp Review and Mont Report.
99.061^	B	Broad River: UT at SR1115 and 1116	n/a	2002	2002	Ruth	N	750-1000
99.062^	C	Broad River: Richardson Creek	n/a	2002	2002	Ruth	N	200-500. NHP Comp Review and Mont Report.
99.063^	D	Broad River: Hayes Lake	n/a	2001	2001	Ruth	N	20-25
99.075^	A	Brice Rare Plant Site	n/a	2013	2013	Ruth	N	>7000. NHP Comp Review and Mont Report.
99.076^	BC	Big Horse Rare Plant Site	n/a	2015	2013	Ruth	Y	included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.
99.079^	C	Broad River: Richardson Creek	n/a	2012	2001	Ruth	N	200-300. NHP Comp Review and Mont Report.
99.090^	D	Broad River: Richardson Creek	n/a	2003	2003	Ruth	N	100-200
99.121^	B	Broad River: Dills Creek	n/a	2004	2004	Ruth	N	300
99.172^	D	Big Horse Rare Plant Site	n/a	2012	2012	Ruth	Y	50-100, Parris Heartleaf RHA voluntary agreement.
99.181^	AB	Broad River: Dills Creek	n/a	2012	2001	Ruth	?	This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.
99.182^	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	included with EO 249
99.249	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.
99.250	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	included with EO 249
99.251	A?	Hensons Creek Natural Area	n/a	2001	2001	Ruth	N	included with EO 249
99.267	CD	Kudzu Farm	n/a	2006	2008	Ruth	N	150-250
99.268	D	Kudzu Farm	n/a	2006	2008	Ruth	N	25-30
99.319	E	Broad River: Big Horse Creek	unk	2012	2012	Ruth		observed but no count made.
100.000	A	Broad River/Sandy Run NA		2012	2012			Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
100.014^	C?	Broad River/Sandy Run NA	177	2009	2001	Clev	N	EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000
100.049^	A	Broad River/Sandy Run NA	1,118	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.
100.050^	A	Broad River/Sandy Run NA	4,801	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.
100.051^	A	Broad River/Sandy Run NA	2,363	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
100.073^	A	Broad River/Sandy Run NA	13,595	2012	2012	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.
100.074^	B	Broad River/Sandy Run NA	722	2012	2008	Clev	Y	In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.
100.149^	A	Broad River/Sandy Run NA	3,280	2012	2009	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)
100.233^	A	Broad River/Sandy Run NA	3,383	2012	2012	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)
100.235	CD	Broad River: Trib N of Broad River and SE of Lake Houser	100 200	2001	2005	Clev	N	Outside Broad River Tract
100.236^	C	Broad River/Sandy Run NA	150 300	2001	2005	Clev	N	Outside Broad River Tract
100.237^	E	Broad River/Sandy Run NA	> 200	2012	2001	Clev	N	Outside Broad River Tract
100.238^	A	Broad River/Sandy Run NA	1,865	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)
100.239^	D	Broad River/Sandy Run NA	165	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)
100.240^	F	Broad River/Sandy Run NA	20	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - "F"
100.241^	D	Broad River/Sandy Run NA	115	2012	2008	Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)
100.246^	D	Broad River/Sandy Run NA	< 100	2001	2005	Clev	N	Outside Broad River Tract
101.000	D	Camp Creek Bluff		2002	2002			Parent EO
101.005	D	Camp Creek Bluff	100 200	2002	2002	Burk	N	
101.006	X	Camp Creek Bluff North	0	1981	1995	Burk	N	
101.180	D	Camp Creek Bluff	100	1995	1981	Burk	N	
117.000	U	First Broad River: Knob Creek: Lemon Gap		2003	2003			Parent EO
117.083	U	First Broad River: Knob Creek: Lemon Gap	100	2003	2003	Burk	N	
117.084	U	First Broad River: Knob Creek: Lemon Gap	100 200	2003	2003	Clev	N	
118.000	A	Big Island Carolina Hemlock Bluff	500	2004	2004	Ruth	N	
124.000	D?	Sandy Spring Church Springhead Swamp	20	2005	2005	Polk	N	
125.000^	A	New Hope Springhead Swamp	12,235	2016	2015	Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.
130.000	B?	Kross Keys NA	> 111	2005	2005	Polk	N	Likely more present
151.000	C	Broad River: Richardson Creek	100 200	2002	2002	Ruth	N	
154.000^	C	Facebook Site	2,576	2016	2015	Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.
157.000*^	AB	First Broad River: Crooked Run Creek	330	2010	2005	Clev	N	DOT no longer monitors, too far from ROW.
158.000*^	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	2016	2016	Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.
176.000	A	Davenport Road/Mountain View Rare Plant Site	6,750	2016	2016			Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.
176.167^	A	Davenport Road/Mountain View Rare Plant Site	n/a	2005	2015	Ruth	N	included with EO 107. NHP Comp Review and Mont Report.
176.168^	A	Davenport Road/Mountain View Rare Plant Site	n/a	2005	2005	Ruth	N	1113. NHP Comp Review and Mont Report.
176.169^	D	Davenport Road/Mountain View Rare Plant Site	n/a	2016	2016	Ruth	N	35. NHP Comp Review and Mont Report.
176.170^	C	Davenport Road/Mountain View Rare Plant Site	n/a	2016	2015	Ruth	N	191. NHP Comp Review and Mont Report.
177.000	A	Broad River: Floyds Creek	12,687	2016	2016			Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.
177.016^	E	Broad River: Floyds Creek	n/a	2014	2012	Ruth	N	5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes	
177.107^	B	Broad River: Floyds Creek	n/a	2008	2015	Ruth	N	241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remianing plants have no formal protection. (TB 9/21/2017)	
177.122^	B?	Broad River: Floyds Creek	n/a	2008	2007	Ruth	N	123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).	
177.163^	B	Broad River: Floyds Creek	n/a	2016	2015	Ruth	N	included with EO 107	
177.164^	A	Broad River: Floyds Creek	n/a	2016	2005	Ruth	N	537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)	
177.165^	C	Broad River: Floyds Creek	n/a	2005	2005	Ruth	N	included with EO 107	
177.166^	CD	Broad River: Floyds Creek	n/a	2005	2005	Ruth	N	included with EO 107	
178.000	A	Catawba River: Hoyle Crk-Micol Crk		2013	2016			Parent EO.	
178.159*^	A	Catawba River: Hoyle Crk-Micol Crk	2182	2013	2005	Burk	N	Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.	
178.160^	A	Catawba River: Hoyle Crk-Micol Crk	733	2013	2008	Burk	N	loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)	
178.161^	A	Catawba River: Hoyle Crk-Micol Crk	2,754	2009	2008	Burk	N	In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.	
178.254^	D?	Catawba River: Hoyle Crk-Micol Crk	> 168	2010	2010	Burk	Y	Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).	
178.255^	D	Catawba River: Hoyle Crk-Micol Crk	unk	2006	2006	Burk	Y	286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.	
178.256^	C?	Catawba River: Hoyle Crk-Micol Crk	> 376	2010	2010	Burk	Y	Permanent conservation easement with Burke Cty and Public School System. "Considerable" number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).	
178.280^	C	Catawba River: Hoyle Crk	126	2009	2009	Burk	Y	Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)	
178.281^	E	Catawba River: Hoyle Crk-Micol Crk	unk	2009	2009	Burk	N	presence noted, no count made - outside of NCDOT ROW	
178.282^	E	Catawba River: Hoyle Crk-Micol Crk	unk	2009	2009	Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
178.283	E	Catawba River: McGalliard Creek	unk	2009	2009	Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
178.284	E	Catawba River: McGalliard Creek	unk	2009	2009	Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
178.310	A	Megalliard Creek Slopes; Lake Rhodhiss	1,500 2,000	2016	2016	Burk	Y	Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.	NHP
179.000	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		2012	2005			Parent EO	
179.030*	CD	NCDOT TIP R-2824	3,291	2013	2001	Cata	N	DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants total in the EO. Last report (2013)documented 4,719 plants.	
179.162*	D	NCDOT TIP R-2825	21	2012	2005	Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.	
183.000	CD	Catawba River: North Fork Mountain Creek	200 300	2005	2005	Cata	Y?	The land where the plant populations are located and the land surrounding the plant populations have been designated as common open space. Eastern-most portion of the polygon falls partially within Mitigation Services Easement. MacLeod Ski Lake site.	
195.000	D	First Broad River: Hickory Creek	22	2006	2006	Clev	N	In DOT study area. No impacts associated with Shelby bypass. No formal protection.	
206.000	D	Buffalo Creek: Ravine	90	2007	2007	Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
207.000	C	Buffalo Creek: Trib S of I-74	346	2000	2000	Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
208.000^	A	Buffalo Creek: Potts Creek	50 100	2012	2007	Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
210.000	E	Catawba River: Drowning Creek UT	unk	2001	2001	Burk	N	No plant count in EO data. Associated with B-3122, Bridge 24. No formal protection.	
211.000	A	First Broad Hop-Hornbeam NA		2002	2002			Parent EO	
211.072^	D	First Broad Hop-Hornbeam NA	> 100	2002	2002	Clev	N		

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
211.194^	A	First Broad River: unnamed tributary	1,965	2000	2000	Clev	Y	Pending NCDOT purchase for right-of-way protection, as of May 2009. Three pops have secured ROW for formal protection, we will receive updated data (TB 9/21/2017).
214.000	A	Buffalo Creek: Tributaries N and S of SR 2047		2012	2000			Parent EO
214.201^	D	Buffalo Creek: Tributary S	64	2000	2000	Clev	?	14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT
214.202^	A	Buffalo Creek: Ravine N	1,627	2000	2000	Clev	?	14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.
214.203^	B	Buffalo Creek: 3rd Tributary S	96	2007	2007	Clev	?	110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?
214.204^	A?	Buffalo Creek: S of SR 2128	?	2000	2000	Clev	?	3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT
214.205^	D	Buffalo Creek: N of SR 2128	171	2000	2000	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.
214.209^	BC	Buffalo Creek: Tributary E of County Fairgrounds	196	2000	2000	Clev	?	Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.
214.212^	D	Buffalo Creek: Slope along Trib just N of SR 2047	97	2000	2000	Clev	N	In DOT study area for R-2707. No formal protection.
214.213^	CD	Buffalo Creek: Ravine just S of SR 2047	50 100	2012	2012	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT
216.000	A	Buffalo Creek: Kings Mountain Res		2016	2000			Parent EO
216.028	B	Buffalo Creek Rare Plant Site	250	2016	2016	Clev	Y	This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)
216.196	D	Buffalo Creek: Friendship Chapel	56	2006	2006	Clev	N	In Dot study area. No formal protection.
216.197^	A	Buffalo Creek: Kings Mountain Res	2,067	2000	2000	Clev	?	NC DOT plans "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement
216.198^	B	Buffalo Creek: Kings Mountain Res	450	2007	2007	Clev	N	In Dot study area. No formal protection.
216.199^	B	Buffalo Creek: Kings Mountain Res	432	2007	2007	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.
216.200^	D	Buffalo Creek: Kings Mountain Res	55	2000	2000	Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT
217.000	B	Broad River: Brushy Creek		2016	2016			Parent EO
217.190	F	Broad River: Brushy Creek	0	2000	2006	Clev	N	No plants found.
217.191*	D	Broad River: Brushy Creek	264	2014	2000	Clev	Y	DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.
217.192	C	Broad River: Brushy Creek	494	2016	2016	Clev	Y	NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).
217.193	C	Broad River: Brushy Creek	271	2000	2000	Clev	?	NC DOT proposes to protect Site 9 through a conservation easement.
217.305	CD	Washburn Switch Business Park	70	2015	2015	Clev	N	Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.
219.000	D	Smith Cliff/Henry Fork River	31	2005	2005	Burk	N	
226.000	B	Catawba River: Lake James		2006	2006			Parent EO
226.045	D	Catawba River: Lake James	11	2005	2005	Burk	N	
226.222	CD	Lake James, SW of bridge	156	2006	2006	Burk	?	Likely more plants present, up to 300? Duke has placed a conservation buffer around plants. Unk if this is permanently binding. Ask Duke. Monitoring report in file - Bridgewater Development. Who is contact?
226.223	X	Lake James, Paddy Creek	0	2006	2006	Burk		
226.224	BC	Lake James, Paddy Creek	87	2006	2006	Burk	?	Likely more plants present, up to 700? Duke has placed a conservation buffer around plants. Unk if this is permanently binding. Ask Duke.
226.225	A	Lake James, Linville Dam	370	2005	2006	Burk	N	
227.000^	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	2014	2014	Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?
229.000	C?	Hogpen Branch Transplant Site	unk	2005	2007	Ruth	Y	10% of impacted plants were to be moved. 500-550 plants in 2006, all were expected to be impacted by construction. No estimation of remaining plants. CE at Kudzu Farm as mitigation - was this done? Ask Corps. 9/8 - Spoke with David Brown at Corps. No CE at Kudzu Farm, unimpacted plants were preserved on site, likely less than 500. Associated with the quarry??
232.000	A?	Buffalo Creek Rare Plant Site		2012	2005			Parent EO.

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
232.046	A	Buffalo Creek Rare Plant Site	500	2005	2005	Clev	N	Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).
232.231	D	Buffalo Creek Rare Plant Site	20	2012	2012	Clev	N	Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).
243.000	AB	Jacob Fork West Corridor		2012	2007			Parent EO
243.012^	A	Jacob Fork West Corridor	> 1,000	1995	1995	Cata	?	Catawba County Wildlife Club RHA voluntary agreement.
243.242^	D	Jacob Fork West Corridor	4	2005	2005	Cata	N	
243.269^	B	Jacob Fork West Corridor	> 200	2007	2008	Cata	Y	TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).
243.270^	C?	Jacob Fork West Corridor	75 100	2012	2008	Cata	Y	TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.
245.000	AB	Floyds Creek Tributray Rare Plant Site		2010	2005			Parent EO
245.091	D	Broad River: Floyds Creek	30	2012	2003	Ruth	N	
245.113	C	Floyds Creek Tributray Rare Plant Site	1,113	2010	2007	Ruth	N	7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?
245.175	C	Floyds Creek Tributray Rare Plant Site	unk	2010	2007	Ruth	N	included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.
247.000	A	New Bethel Rare Plant Site		2015	2015			Parent EO, NC DOT Mitigation Site
247.013	D	Sandy Mush Outcrop	< 100	2005	2005	Ruth	N	
247.056	D	Broad River: Floyds Creek	< 150	2002	2001	Ruth	N	
247.080^	D	Broad River: Floyds Creek	50	2012	2003	Ruth	N	No plant count made in 2012. 50 plants counted in 2003.
247.106*^	A	New Bethel Rare Plant Site	4,547	2015	2008	Ruth	Y	Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).
247.114^	D	Broad River Floyds Creek	0	2010	2003	Ruth	N	14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017
247.115^	C	Broad River Floyds Creek	133	2005	2007	Ruth	N	Combine with EO 114
247.173^	D	Broad River Floyds Creek	102	2005	2003	Ruth	N	inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??
247.174^	D	Broad River Floyds Creek	84	2010	2003	Ruth	N	35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area
247.286*^	B	New Bethel Rare Plant Site	326	2015	2015	Ruth	Y	Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.
248.000	C	Jonas Road Rare Plant Site		2005	2005			Parent EO
248.040	C	Jonas Road Rare Plant Site	150 200	2005	2005	Ruth	N	
248.054	D	Broad River: McKinney Creek	20 30	2014	2001	Ruth	N	20-30 plants noted for last count in 2005
252.000	B	South Fork Catawba River, Henry Fork		2007	2005			Parent EO
252.019	D?	NCDOT TIP: R-0085	unk	2007	2007	Cata	?	EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.
252.020	B	NCDOT TIP: R-0086	296	2007	2005	Cata	?	May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.
261.000	B	Leepers Creek Heartleaf Site		2006	2006			Parent EO
261.258^	B	Lincoln-Lincoln County Airport and Leepers Creek	571	2006	2006	Linc	N	1,246 totsl plants, 675 plants from this location moved to Rhyne Conservation Preserve (EO 302).
261.259^	B	Lincoln-Lincoln County Airport and Leepers Creek	6,461	2005	2005	Linc	N	No access per NHP. Maybe an airport expansion in the future?
261.263^	E	Leepers Creek Heartleaf Site	unk	2001	2001	Linc	N	presence noted, no count made
264.000	E	Carpenter Creek Heartleaf Site	unk	2001	2001	Linc	N	presence noted, no count made
265.000	E	June Bug Woods/Seagletown Woods	unk	2000	2000	Linc	N	presence noted, no count made
266.000	E	Indian Creek Woods	unk	2001	2001	Linc	N	presence noted, no count made
271.000	C?	Pott Creek	5 6	2012	2012	Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
272.000	BC	No Business Creek, Boyd Tract	75 150	2007	2007	Clev	N	
274.000	A?	Broad River/Sandy Run NA	100	2012	2008	Clev	Y	Broad River Greenway, Town of Boiling Springs

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
275.000*	C	Buffalo Shoals Creek	257	2014	2014	Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
276.000^	A	Cliffside Steam Station	39,535	2016	2016	Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
277.000	D	Hickory: Martin Marietta Quarry	0	2011	2011	Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
278.000	H	West Fork Brushy Creek	1	1980	1980	Clev	N	Last observation in 1980, rank is now historical.
279.000	D?	Northeast Lincolnton: UT Walker Branch	?	2009	2009	Linc	N	small
287.000	AB	Fox Knoll Farm	?	2016	2016	Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
291.000	C	Gunpowder Creek	82	2012	2010	Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
292.000	D	Forest City: Adj to Isothermal CC	150	2010	2010	Ruth	N	Owner, Ruthford County.
293.000	E	Killian Crossroads	unk	2010	2010	Cata	N	No plant count in EO data.
295.000	B	Hickory Area		2016	2011		Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
295.021	A	Hickory Area, Catawba River: Geitner Park	> 300	2005	2005	Burk	?	Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?
295.294	C	Hickory Area: Bud Geitner Park Transplant Site	153	2016	2014	Burk	?	Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.
295.313	E	NCDOT TIP U-4700	unk	2012	2012	Cata	N	Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.
295.314	E	NCDOT TIP U-4700	unk	2012	2012	Cald	N	Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).
296.000	CD	UT of Kings Mountain Res	100	2012	2012	Gast	N	
297.000	CD	Beaverdam Crk at First Broad River	unk	2011	2011	Clev	N	No plant count in EO data.
298.000	C	Brushy Creek Headwaters	250 300	2014	2014	Clev	N	
299.000	D	Lincoln County, SR-1314	27	2014	2014	Linc	N	In DOT study. No formal protection.
300.000	D	Levan Family Farm	50	2013	2013	Ired	N	
302.000	A	Rhyne Conservation Preserve		2016	2014			Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
302.047	D	NCDOT Project R-617C, South Fork Catawba	5	2005	2005	Linc	N	In DOT ROW, no formal protection.
302.262	A	Rhyne Conservation Preserve	19,873	2016	2016	Linc	Y	Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.
303.000	AB	Smith Cliff/Henry Fork River	?	2015	2015	Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
304.000	B?	Simms Hill/Little River Uplands	200 250	2015	2015	Burk	Y	Conservation site managed by the Foothills Conservancy of NC
306.000	D	Fanjoy Road Site	75	2015	2015	Ired	N	
307.000	C	First Broad River: Beaverdam Creek tribs		2006	2006		?	Parent EO
307.036	CD	First Broad River: Beaverdam Creek, UT	?	1997	1997	Clev	N	sparse
307.187	C	First Broad River: Beaverdam Creek, Ravine	264	2001	2001	Clev	N	In DOT study area, no formal protection.
307.188	E	First Broad River: Beaverdam Creek, trib N of SR 1316	471	2000	2000	Clev	Y	NCDOT mitigation site. Cows removed? Portions of Sites 1 and 2 are contained within the DOT ROW. Per 2015 draft report, 471 plants in entire EO. 313 plants in protected DOT ROW. Has formal protection in ROW.
307.189	D	First Broad River: Beaverdam Creek, ravine to UT	1	2006	2006	Clev	N	
308.000	C	Glade Creek, Alex County	2,194	2017	2017	Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
309.000	D?	South Mountains Pleasant Grove Uplands	?	2016	2016	Burk	N	few
311.000	A	Collinsville (Hughes) Creek Slopes	200 750	2016	2016	Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
312.000	A	Richardson Creek trib above Toms Lake	?	2016	2016	Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
316.000	C	Northern Catawba County		2017	2017		?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	2006	2006	Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
316.315	D	NC-127/Cloninger Mill Road	60	2017	2017	Cata	?	Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A
317.000	D	NCDOT TIP R-3603A	30	2017	2017	Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
318.000	C	Burke County - Drowning Creek UT	356	2017	2017	Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
320.000	E	Hickory Creek - UT (Shelby High School)	15	2016	2016	Clev		
321.000	B	Gunpowder Creek: South of Hudson	2475	2012	2012	Cald		NCDOT

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes	
Add		Rock Barn Solar Farm	821			Cata	Y	Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded.	NHP

Total 367,690

* DOT monitors

^ In 2011 5-YR Review as Populations estimated to contain >1,000 plants.

Pops/subpops >1,000 plants, current data.

green Broad River Greenway

NC

County	Total Pops
Clev	25
Burk	14
Ruth	14
Cata	13
Linc	10
Cald	6
Polk	6
Alex	3
Ired	3
Burk/Cald/Cata	1
Burk/Clev	1
Clev/Ruth	1
Gast	1
	98

SC

County	Total Pops
Spar	10
Cher	3
Gree	2
Gree/Spar	1
	16

EO Number	EO Number2	EO Rank	Site Name	Last Observed	Rank Date
98.002	2	X	South Fork Catawba River, Indian Creek	1957	1980
98.003	3	D	Cat Square Heartleaf Forest	2001	1995
101.006	6	X	Camp Creek Bluff North	1981	1995
8.000	**8**	D	First Broad River: Knob Creek	2002	2000
99.010	10	A	Kudzu Farm Rare Plant Site	2014	2013
11.000	**11**	X	South Fork Catawba River: Henry Fork, Pleasant Grove	1981	1995
100.014	14	C?	Broad River/Sandy Run NA	2009	2001
177.016	16	E	Broad River: Floyds Creek	2014	2012
252.020	20	B	NCDOT TIP: R-0086	2007	2005
23.000	**23**	A	Mill Creek Forest and Seep	2016	2015
179.030	30	CD	NCDOT TIP R-2824	2013	2001
31.000	**31**	C?	NCDOT TIP: R-2824	2010	2001
32.000	**32**	D	NCDOT TIP R-2824	2013	2011
93.035	35	D	First Broad River: Brushy Creek	2016	2001
99.037	37	C	Broad River: Hunter Road	2005	2015
44.000	**44**	AB	Little Gunpowder Creek Rare Plant Site 1	2015	2011
100.049	49	A	Broad River/Sandy Run NA	2012	2008
100.050	50	A	Broad River/Sandy Run NA	2012	2008
100.051	51	A	Broad River/Sandy Run NA	2012	2008
99.052	52	C	Hensons Creek Natural Area	2005	2001
248.054	54	D	Broad River: McKinney Creek	2014	2001
99.055	55	AB	Broad River: Richardson Creek	2016	2015
247.056	56	D	Broad River: Floyds Creek	2002	2001
98.060	60	D	NCDOT TIP: B-2119	2012	2001
100.074	74	B	Broad River/Sandy Run NA	2012	2008
99.076	76	BC	Big Horse Rare Plant Site	2015	2013
77.000	**77**	CD	Little Gunpowder Creek Rare Plant Site 2	2013	2007
99.079	79	C	Broad River: Richardson Creek	2012	2001
247.080	80	D	Broad River: Floyds Creek	2012	2003
245.091	91	D	Broad River: Floyds Creek	2012	2003
96.000	**96**	A	Murrays Mill/Upper Balls Creek NA	2013	2010
97.000	**97**	C	Sandy Run/Cliffside NA	2002	2002
98.000	**98**	CD	Cat Square Heartleaf Forest	2012	2001
247.106	106	A	New Bethel Rare Plant Site	2015	2008
177.107	107	B	Broad River: Floyds Creek	2008	2015
245.113	113	C	Floyds Creek Tributray Rare Plant Site	2010	2007
247.114	114	D	Broad River Floyds Creek	2010	2003
247.115	115	C	Broad River Floyds Creek	2005	2007
177.122	122	B?	Broad River: Floyds Creek	2008	2007
125.000	**125**	A	New Hope Springhead Swamp	2016	2015
100.149	146	A	Broad River/Sandy Run NA	2012	2009
154.000	**154**	C	Facebook Site	2016	2015
157.000	**157**	AB	First Broad River: Crooked Run Creek	2010	2005
178.159	159	A	Catawba River: Hoyle Crk-Micol Crk	2013	2005
178.160	160	A	Catawba River: Hoyle Crk-Micol Crk	2013	2008
178.161	161	A	Catawba River: Hoyle Crk-Micol Crk	2009	2008
179.162	162	D	NCDOT TIP R-2825	2012	2005
177.163	163	B	Broad River: Floyds Creek	2016	2015
177.164	164	A	Broad River: Floyds Creek	2016	2005
177.165	165	C	Broad River: Floyds Creek	2005	2005
176.167	167	A	Davenport Road/Mountain View Rare Plant Site	2005	2015
176.168	168	A	Davenport Road/Mountain View Rare Plant Site	2005	2005
176.170	170	C	Davenport Road/Mountain View Rare Plant Site	2016	2015
247.173	173	D	Broad River Floyds Creek	2005	2003
247.174	174	D	Broad River Floyds Creek	2010	2003
245.175	175	C	Floyds Creek Tributray Rare Plant Site	2010	2007
178.000	**178**	A	Catawba River: Hoyle Crk-Micol Crk	2013	2016
179.000	**179**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	2012	2005
101.180	180	D	Camp Creek Bluff	1995	1981
99.181	181	AB	Broad River: Dills Creek	2012	2001
96.184	184	A	Murrays Mill/Upper Balls Creek NA	2013	2010
217.190	190	F	Broad River: Brushy Creek	2000	2006
217.191	191	D	Broad River: Brushy Creek	2014	2000
208.000	**208**	A	Buffalo Creek: Potts Creek	2012	2007
214.000	**214**	A	Buffalo Creek: Tributaries N and S of SR 2047	2012	2000
216.000	**216**	A	Buffalo Creek: Kings Mountain Res	2016	2000
226.225	225	A	Lake James, Linville Dam	2005	2006
229.000	**229**	C?	Hogpen Branch Transplant Site	2005	2007
232.000	**232**	A?	Buffalo Creek Rare Plant Site	2012	2005
100.235	235	CD	Broad River: Trib N of Broad River and SE of Lake Houser	2001	2005
100.236	236	C	Broad River/Sandy Run NA	2001	2005
100.237	237	E	Broad River/Sandy Run NA	2012	2001
100.238	238	A	Broad River/Sandy Run NA	2012	2008
100.239	239	D	Broad River/Sandy Run NA	2012	2008
100.240	240	F	Broad River/Sandy Run NA	2012	2008
100.241	241	D	Broad River/Sandy Run NA	2012	2008

EO Number	EO Number2	EO Rank	Site Name	Last Observed	Rank Date
243.000	**243**	AB	Jacob Fork West Corridor	2012	2007
245.000	**245**	AB	Floyds Creek Tributray Rare Plant Site	2010	2005
100.246	246	D	Broad River/Sandy Run NA	2001	2005
252.000	**252**	B	South Fork Catawba River, Henry Fork	2007	2005
99.267	267	CD	Kudzu Farm	2006	2008
99.268	268	D	Kudzu Farm	2006	2008
243.269	269	B	Jacob Fork West Corridor	2007	2008
243.270	270	C?	Jacob Fork West Corridor	2012	2008
274.000	**274**	A?	Broad River/Sandy Run NA	2012	2008
291.000	**291**	C	Gunpowder Creek	2012	2010
295.294	294	C	Hickory Area: Bud Geitner Park Transplant Site	2016	2014
295.000	**295**	B	Hickory Area	2016	2011
302.000	**302**	A	Rhyne Conservation Preserve	2016	2014

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
1	3	3852	H	Beaverdam Creek/3 mi east of Travelers Rest				1964	2009	GREE			
1	5	7689	CD	Sagittaria Hydrology Site		150	200	1991	2008	GREE			Doug Rayner (Wofford College) - emailed 12/12/17
1	6	1160	CD	Junction of SSR173 and SSR 262		75	100	1991	2008	GREE			
1	8	4875	BD	UT Beaverdam Creek/S-903		150		1991	2008	GREE			
1	15	1713	AC	DNR Bunched Arrowhead Preserve		1		1991	2010	GREE	Y	DNR Bunched Arrowhead Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
1	52	730	AC	DNR Belvue Springs Heritage Preserve		?		1999	2008	GREE		"numerous clumps", DNR Belvue Springs HP. Is this the same as the Bunched Arrowhead Preserve?	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
2	10	7931	H?	UT Enoree River				1985	2010	GREE			
2	51	6287	BC	DNR Clear Creek Heritage Preserve		1		1999	2008	GREE	Y	DNR Clear Creek Heritage Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	22	1649	BD	UT Tyger River/south of S-75		50	100	1991	2008	SPAR		same as 9058	
3	23	9058	BD	UT Tyger River/south of S-75						SPAR		same as 1649 (duplicate plant count)	
4	2	7399	BD	1.5 mi south of Gowensville/SC14		150		1991	2008	GREE			
4	4	3101	CD	Fairview Farms		75		1991	2008	SPAR			
4	24	6179	CD	UT Motlow Creek		50	100	1991	2008	SPAR			
4	32	5677	BD	Page Creek at Landrum HS		155		1991	2008	SPAR			
4	33	4879	BD	NW of Junction SC11 and SC14		168		1991	2008	GREE			
4	36	1993	BD	Clear Branch Creek		303		1991	2008	SPAR			
4	38	3367	BD	UT Spivey Creek	+	1000		1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
4	39	8503	CD	1 mi SW of US176 and S-209 in Ingleside		66		1991	2008	SPAR			
4	40	8504	BD	UT Clear Branch Creek		221		1991	2008	SPAR			
4	41	1460	CD	SC 14 and High Farm Road		50	100	1991	2008	SPAR			
4	42	8856	BD	1/4 mi E of SC14 and South Pacolet River		189		1991	2008	GREE/SPAR			
4	49	1450	AB	UT Page Creek/Campbell Ave		750	800	2001	2008	SPAR	?	2001: "new Spartanburg Water Systems preserve"	Spartanburg Water System (who?)
4	50	1449	BD	Page Creek Sewer Line		400	550	2001	2008	SPAR	?	2001: "an easment is being sought"	Spartanburg Water System (who?)
4	54	2719	BD	Headwater UT Wolfe Creek		400		2001	2008	SPAR	?	"On City of Landrum Property"	
4	59	13002	BD	Beaver Dam Creek/MetCalf		250	500	2005	2011	SPAR			
5	30	6009	BD	Greene Creek		100		1994	2008	SPAR			
6	25	878	CD	Lake William Bowen		10	20	1991	2008	SPAR			
7	37	6749	CD	Bear Creek		56		1991	2008	SPAR			
8	35	108	BD	Alverson Grove Church		74		1991	2008	SPAR			
9	34	7788	BD	Arrowood Branch		13		1991	2008	SPAR			
10	31	1730	H?	Blalock Res Site P				1984	2009	SPAR		NCNHP includes EO 7 and 31 as Blalock sites, 5-YR Review includes EO 7 and 29. 2km rule groups EO 7 and 29 together with EO 31 separate (>2km) but close by.	Spartanburg Water System (who?)
11	7	7013	BD	Taylor Blalock Res		1500		1991	2008	SPAR		James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
11	29	6010	H?	Blalock Res Site C				1984	2009	SPAR			Spartanburg Water System (who?)
12	20	3552	BD	Camp Mary Elizabeth		150		1991	2008	SPAR	?	Girl Scouts of America	Fred Parrish
12	21	1984	BD	Beaverdam Creek/Claggett Raintree		700		1991	2008	SPAR	?	SC Nature Conservancy	Kristen Austin (TNC SC) emailed 12/12/17, or Fred Parrish
12	55	2486	CD	UT North Tyger River/Woodridge		50		2001	2008	SPAR			
13	9	7930	CD	Chinquapin Creek		?		1991	2008	SPAR		"two small colonies"	Fred Parrish
13	13	6456	BD	UT Cleveland Park Lake		50		1991	2008	SPAR	?	City of Spartanburg - Cleveland Park	Fred Parrish
13	19	3551	BC	USC-Upstate		25	50	1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
13	46	2369	CD	Shoally Creek		25		1998	2008	SPAR			
13	53	8981	BC	USC-Upstate		250	300	2000	2008	SPAR		Is this a part of other USC population?	Doug Rayner (Wofford College) - emailed 12/12/17
13	56	6523	BD	Lawsons Fork Creek on US221		200	250	2001	2008	SPAR			
14	11	6097	AB	DNR Peters Creek Heritage Preserve		2500		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	14	2791	AB	DNR Peters Creek Heritage Preserve		5000		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve, Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	26	5183	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	27	4476	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	28	8667	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	47	6953	U	Cannon Campground Road and Kelly Road				1998	2008	SPAR			
14	48	2769	U	Kelly Road				1998	2008	SPAR			
14	57	4312	BD	Lincoln Memorial Cem/Cannon Campground Rd		450	600	1997	2012	SPAR			
15	16	916	BC	Cowpens NBF - Site 1		20		1991	2008	CHER		US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
15	17	5173	BC	Cowpens NBF - Site 3	+	130		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
15	18	6825	BC	Cowpens NBF - Site 2		50		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
16	1	235	BD	Cherokee Creek/SC 11		200		1991	2008	CHER			
16	44	3124	H?	SW side of SC 11 - 5.45 mi NW of I-85				1984	2009	CHER			
16	45	5554	U	Lenzer Circle				1989	2008	CHER			
16	60	13003	BD	Cherokee Creek/Bonner and Robin School Roads		1500		2004	2011	CHER			
17	43	7286	CD	McKee Drive		20		1991	2008	CHER			
18	12	1322	H?	Horse Creek				1986	2012	CHER			
				Boulder Creek Subdivision - Jordan Road		15	20	2006		GREE	Y	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
				Gateway Elementary School						GREE		"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
1	**23.000^**	A	Mill Creek Forest and Seep	1,733	>1000	2016	2015		Polk	N	NHP Comp Review and Mont Report.
2	**29.000^**	A	Island Creek Heath Bluff	50,541	>1000	2016	2016		Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
3	**31.000*^**	C?	NCDOT TIP: R-2824	1,062	>1000	2010	2001		Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
4	**32.000***	D	NCDOT TIP R-2824	457	100-500	2013	2011		Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
5	**44.000*^**	AB	Little Gunpowder Creek Rare Plant Site 1	617	500-1000	2015	2011		Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
6	**77.000***	CD	Little Gunpowder Creek Rare Plant Site 2	699	500-1000	2013	2007		Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
7	**87.000**	D	Catawba River: Lower Creek: Miller Creek	0	<100	2011	2011		Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
8	**93.000**	D	West Shelby Mesic Slope		100-500	2005	2005				Parent EO
	93.034	*D*	*West Shelby Mesic Slope*	*60*		*2005*	*2005*		*Clev*	*N*	
	93.035	*D*	*First Broad River: Brushy Creek*	*< 100*		*2016*	*2001*		*Clev*	*N*	*8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.*
9	**96.000**	A	Murrays Mill/Upper Balls Creek NA		>1000	2013	2010				Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
	*96.038^*	*CD*	*Catawba River: Deal Property*	*100 200*		*1996*	*1996*		*Cata*	*N*	
	*96.039^*	*D*	*Murrays Mill/Upper Balls Creek NA*	*< 50*		*2002*	*2002*		*Cata*	*?*	*Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)*
	96.184^*	*A*	*Murrays Mill/Upper Balls Creek NA*	*11,860*		*2013*	*2010*		*Cata*	*Y*	*NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)*
10	**98.000**	CD	Cat Square Heartleaf Forest		100-500	2012	2001				Parent EO
	98.002	*X*	*South Fork Catawba River, Indian Creek*	*0*		*1957*	*1980*		*Linc*	*N*	*Extirpated*
	98.003	*D*	*Cat Square Heartleaf Forest*	*160*		*2001*	*1995*		*Linc*	*N*	*presence noted in 2001, 160 plants counted in 1995*
	98.004	*CD*	*Cat Square Heartleaf Forest*	*200*		*2001*	*2001*		*Linc*	*N*	
	98.060	*D*	*NCDOT TIP: B-2119*	*20 50*		*2012*	*2001*		*Linc*	*N*	*EO is associated with NC DOT project B-2119*
11	**99.000**	A	Big Horse Creek Rare Plant Site	106,940	>1000	2015	2015				Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
	*99.009^*	*AB*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*Presence noted in 2012 - no count made, 500 estimate plants in 2005*
	*99.010^*	*A*	*Kudzu Farm Rare Plant Site*	*n/a*		*2014*	*2013*		*Ruth*	*N*	*33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.*
	*99.037^*	*C*	*Broad River: Hunter Road*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.*
	*99.052^*	*C*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2001*		*Ruth*	*N*	*200-300*
	*99.053^*	*D*	*Broad River: McKinney Bridge*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*<35*
	*99.055^*	*AB*	*Broad River: Richardson Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*Included with EO 37. NHP Comp Review and Mont Report.*
	*99.061^*	*B*	*Broad River: UT at SR1115 and 1116*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*750-1000*
	*99.062^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*200-500. NHP Comp Review and Mont Report.*
	*99.063^*	*D*	*Broad River: Hayes Lake*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*20-25*
	*99.075^*	*A*	*Brice Rare Plant Site*	*n/a*		*2013*	*2013*		*Ruth*	*N*	*>7000. NHP Comp Review and Mont Report.*
	*99.076^*	*BC*	*Big Horse Rare Plant Site*	*n/a*		*2015*			*Ruth*	*Y*	*included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.*
	*99.079^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2012*	*2001*		*Ruth*	*N*	*200-300. NHP Comp Review and Mont Report.*
	*99.090^*	*D*	*Broad River: Richardson Creek*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*100-200*
	*99.121^*	*B*	*Broad River: Dills Creek*	*n/a*		*2004*	*2004*		*Ruth*	*N*	*300*
	*99.172^*	*D*	*Big Horse Rare Plant Site*	*n/a*		*2012*	*2012*		*Ruth*	*Y*	*50-100, Parris Heartleaf RHA voluntary agreement.*
	*99.181^*	*AB*	*Broad River: Dills Creek*	*n/a*		*2012*	*2001*		*Ruth*	*?*	*This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
	*99.182^*	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.249	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.*
	99.250	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.251	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.267	*CD*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*150-250*
	99.268	*D*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*25-30*
	99.319	*E*	*Broad River: Big Horse Creek*	*unk*		*2012*	*2012*		*Ruth*		*observed but no count made.*
12	**100.000**	A	Broad River/Sandy Run NA		>1000	2012	2012				Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
	*100.014^*	*C?*	*Broad River/Sandy Run NA*	*177*		*2009*	*2001*		*Clev*	*N*	*EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000*
	*100.049^*	*A*	*Broad River/Sandy Run NA*	*1,118*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.*
	*100.050^*	*A*	*Broad River/Sandy Run NA*	*4,801*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.*
	*100.051^*	*A*	*Broad River/Sandy Run NA*	*2,363*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.*
	*100.073^*	*A*	*Broad River/Sandy Run NA*	*13,595*		*2012*	*2012*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.*
	*100.074^*	*B*	*Broad River/Sandy Run NA*	*722*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.*
	*100.149^*	*A*	*Broad River/Sandy Run NA*	*3,280*		*2012*	*2009*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.233^*	*A*	*Broad River/Sandy Run NA*	*3,383*		*2012*	*2012*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)*
	100.235	*CD*	*Broad River: Trib N of Broad River and SE of Lake Houser*	*100 200*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.236^*	*C*	*Broad River/Sandy Run NA*	*150 300*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.237^*	*E*	*Broad River/Sandy Run NA*	*> 200*		*2012*	*2001*		*Clev*	*N*	*Outside Broad River Tract*
	*100.238^*	*A*	*Broad River/Sandy Run NA*	*1,865*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.239^*	*D*	*Broad River/Sandy Run NA*	*165*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.240^*	*F*	*Broad River/Sandy Run NA*	*20*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - "F"*
	*100.241^*	*D*	*Broad River/Sandy Run NA*	*115*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.246^*	*D*	*Broad River/Sandy Run NA*	*< 100*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
13	**125.000^**	A	New Hope Springhead Swamp		>1000	2016	2015		Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.
14	**154.000^**	C	Facebook Site	2,576	>1000	2016	2015		Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.
15	**157.000*^**	AB	First Broad River: Crooked Run Creek	330	100-500	2010	2005		Clev	N	DOT no longer monitors, too far from ROW.
16	**158.000*^**	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	100-500	2016	2016		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.
17	**176.000**	A	Davenport Road/Mountain View Rare Plant Site	6,750	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.
	*176.167^*	*A*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*included with EO 107. NHP Comp Review and Mont Report.*
	*176.168^*	*A*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*1113. NHP Comp Review and Mont Report.*
	*176.169^*	*D*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2016*	*2016*		*Ruth*	*N*	*35. NHP Comp Review and Mont Report.*
	*176.170^*	*C*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*191. NHP Comp Review and Mont Report.*
18	**177.000**	A	Broad River: Floyds Creek	12,687	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.
	*177.016^*	*E*	*Broad River: Floyds Creek*	*n/a*		*2014*	*2012*		*Ruth*	*N*	*5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).*
	*177.107^*	*B*	*Broad River: Floyds Creek*	*n/a*		*2008*	*2015*		*Ruth*	*N*	*241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remianing plants have no formal protection. (TB 9/21/2017)*
	*177.122^*	*B?*	*Broad River: Floyds Creek*	*n/a*		*2008*	*2007*		*Ruth*	*N*	*123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes	
	177.163^	B	Broad River: Floyds Creek	n/a		2016	2015		Ruth	N	included with EO 107	
	177.164^	A	Broad River: Floyds Creek	n/a		2016	2005		Ruth	N	537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)	
	177.165^	C	Broad River: Floyds Creek	n/a		2005	2005		Ruth	N	included with EO 107	
	177.166^	CD	Broad River: Floyds Creek	n/a		2005			Ruth	N	included with EO 107	
19	**178.000**	A	Catawba River: Hoyle Crk-Micol Crk		>1000	2013	2016				Parent EO.	
	178.159*^	A	Catawba River: Hoyle Crk-Micol Crk	2182		2013	2005		Burk	N	Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.	
	178.160^	A	Catawba River: Hoyle Crk-Micol Crk	733		2013	2008		Burk	N	loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)	
	178.161^	A	Catawba River: Hoyle Crk-Micol Crk	2,754		2009			Burk	N	In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.	
	178.254^	D?	Catawba River: Hoyle Crk-Micol Crk	> 168		2010	2010		Burk	Y	Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).	
	178.255^	D	Catawba River: Hoyle Crk-Micol Crk	unk		2006	2006		Burk	Y	286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.	
	178.256^	C?	Catawba River: Hoyle Crk-Micol Crk	> 376		2010	2010		Burk	Y	Permanent conservation easement with Burke Cty and Public School System. "Considerable" number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).	
	178.280^	C	Catawba River: Hoyle Crk	126		2009	2009		Burk	Y	Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)	
	178.281^	E	Catawba River: Hoyle Crk-Micol Crk	unk		2009	2009		Burk	N	presence noted, no count made - outside of NCDOT ROW	
	178.282^	E	Catawba River: Hoyle Crk-Micol Crk	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.283	E	Catawba River: McGalliard Creek	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.284	E	Catawba River: McGalliard Creek	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.310	A	Megalliard Creek Slopes; Lake Rhodhiss	1,500 2,000		2016	2016		Burk	Y	Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.	NHP
20	**179.000**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		>1000	2012	2005				Parent EO	
*	179.030*	CD	NCDOT TIP R-2824	3,291		2013	2001		Cata	N	DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants total in the EO. Last report (2013)documented 4,719 plants.	
	179.162*	D	NCDOT TIP R-2825	21		2012	2005		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.	
21	**206.000**	D	Buffalo Creek: Ravine	90	<100	2007	2007		Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
22	**208.000^**	A	Buffalo Creek: Potts Creek	50 100	<100	2012	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
23	**214.000**	A	Buffalo Creek: Tributaries N and S of SR 2047		>1000	2012	2000				Parent EO	
	214.201^	D	Buffalo Creek: Tributary S	64		2000	2000		Clev	?	14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT	
	214.202^	A	Buffalo Creek: Ravine N	1,627		2000	2000		Clev	?	14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.	
	214.203^	B	Buffalo Creek: 3rd Tributary S	96		2007	2007		Clev	?	110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?	
	214.204^	A?	Buffalo Creek: S of SR 2128	?		2000	2000		Clev	?	3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT	
	214.205^	D	Buffalo Creek: N of SR 2128	171		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.	
	214.209^	BC	Buffalo Creek: Tributary E of County Fairgrounds	196		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.	
	214.212^	D	Buffalo Creek: Slope along Trib just N of SR 2047	97		2000	2000		Clev	N	In DOT study area for R-2707. No formal protection.	
	214.213^	CD	Buffalo Creek: Ravine just S of SR 2047	50 100		2012	2012		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT	
24	**216.000**	A	Buffalo Creek: Kings Mountain Res		>1000	2016	2000				Parent EO	
	216.028	B	Buffalo Creek Rare Plant Site	250		2016	2016		Clev	Y	This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)	
	216.196	D	Buffalo Creek: Friendship Chapel	56		2006	2006		Clev	N	In Dot study area. No formal protection.	
	216.197^	A	Buffalo Creek: Kings Mountain Res	2,067		2000	2000		Clev	?	NC DOT plans "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement	
	216.198^	B	Buffalo Creek: Kings Mountain Res	450		2007	2007		Clev	N	In Dot study area. No formal protection.	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
	*216.199^*	*B*	*Buffalo Creek: Kings Mountain Res*	*432*		*2007*	*2007*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.*
	*216.200^*	*D*	*Buffalo Creek: Kings Mountain Res*	*55*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT*
25	**217.000**	B	Broad River: Brushy Creek		>1000	2016	2016				Parent EO
	217.190	*F*	*Broad River: Brushy Creek*	*0*		*2000*	*2006*		*Clev*	*N*	*No plants found.*
	*217.191**	*D*	*Broad River: Brushy Creek*	*264*		*2014*	*2000*		*Clev*	*Y*	*DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.*
	217.192	*C*	*Broad River: Brushy Creek*	*494*		*2016*	*2016*		*Clev*	*Y*	*NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).*
	217.193	*C*	*Broad River: Brushy Creek*	*271*		*2000*	*2000*		*Clev*	*?*	*NC DOT proposes to protect Site 9 through a conservation easement.*
	217.305	*CD*	*Washburn Switch Business Park*	*70*		*2015*	*2015*		*Clev*	*N*	*Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.*
26	**227.000^**	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	>1000	2014	2014		Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?
27	**232.000**	A?	Buffalo Creek Rare Plant Site		500-1000	2012	2005				Parent EO.
	232.046	*A*	*Buffalo Creek Rare Plant Site*	*500*		*2005*	*2005*		*Clev*	*N*	*Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
	232.231	*D*	*Buffalo Creek Rare Plant Site*	*20*		*2012*	*2012*		*Clev*	*N*	*Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
28	**243.000**	AB	Jacob Fork West Corridor		>1000	2012	2007				Parent EO
	*243.012^*	*A*	*Jacob Fork West Corridor*	*> 1,000*		*1995*	*1995*		*Cata*	*?*	*Catawba County Wildlife Club RHA voluntary agreement.*
	*243.242^*	*D*	*Jacob Fork West Corridor*	*4*		*2005*	*2005*		*Cata*	*N*	
	*243.269^*	*B*	*Jacob Fork West Corridor*	*> 200*		*2007*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).*
	*243.270^*	*C?*	*Jacob Fork West Corridor*	*75 100*		*2012*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.*
29	**245.000**	AB	Floyds Creek Tributray Rare Plant Site		>1000	2010	2005				Parent EO
	245.091	*D*	*Broad River: Floyds Creek*	*30*		*2012*	*2003*		*Ruth*	*N*	
	245.113	*C*	*Floyds Creek Tributray Rare Plant Site*	*1,113*		*2010*	*2007*		*Ruth*	*N*	*7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?*
	245.175	*C*	*Floyds Creek Tributray Rare Plant Site*	*unk*		*2010*	*2007*		*Ruth*	*N*	*included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.*
30	**247.000**	A	New Bethel Rare Plant Site		>1000	2015	2015				Parent EO, NC DOT Mitigation Site
	247.013	*D*	*Sandy Mush Outcrop*	*< 100*		*2005*	*2005*		*Ruth*	*N*	
	247.056	*D*	*Broad River: Floyds Creek*	*< 150*		*2002*	*2001*		*Ruth*	*N*	
	*247.080^*	*D*	*Broad River: Floyds Creek*	*50*		*2012*	*2003*		*Ruth*	*N*	*No plant count made in 2012. 50 plants counted in 2003.*
*	*247.106*^*	*A*	*New Bethel Rare Plant Site*	*4,547*		*2015*	*2008*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).*
	*247.114^*	*D*	*Broad River Floyds Creek*	*0*		*2010*	*2003*		*Ruth*	*N*	*14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017*
	*247.115^*	*C*	*Broad River Floyds Creek*	*133*		*2005*	*2007*		*Ruth*	*N*	*Combine with EO 114*
	*247.173^*	*D*	*Broad River Floyds Creek*	*102*		*2005*	*2003*		*Ruth*	*N*	*inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??*
	*247.174^*	*D*	*Broad River Floyds Creek*	*84*		*2010*	*2003*		*Ruth*	*N*	*35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area*
*	*247.286*^*	*B*	*New Bethel Rare Plant Site*	*326*		*2015*	*2015*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.*
31	**248.000**	C	Jonas Road Rare Plant Site		100-500	2005	2005				Parent EO
	248.040	*C*	*Jonas Road Rare Plant Site*	*150 200*		*2005*	*2005*		*Ruth*	*N*	
	248.054	*D*	*Broad River: McKinney Creek*	*20 30*		*2014*	*2001*		*Ruth*	*N*	*20-30 plants noted for last count in 2005*
32	**252.000**	B	South Fork Catawba River, Henry Fork		100-500	2007	2005				Parent EO
	252.019	*D?*	*NCDOT TIP: R-0085*	*unk*		*2007*	*2007*		*Cata*	*?*	*EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.*
	252.020	*B*	*NCDOT TIP: R-0086*	*296*		*2007*	*2005*		*Cata*	*?*	*May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.*
33	**271.000**	C?	Pott Creek	5 6	<100	2012	2012		Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
34	**272.000**	BC	No Business Creek, Boyd Tract	75 150	100-500	2007	2007		Clev	N	
35	**274.000**	A?	Broad River/Sandy Run NA	100	100-500	2012	2008		Clev	Y	Broad River Greenway, Town of Boiling Springs
36	**275.000***	C	Buffalo Shoals Creek	257	100-500	2014	2014		Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
37	**276.000^**	A	Cliffside Steam Station	39,535	>1000	2016	2016		Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
38	**277.000**	D	Hickory: Martin Marietta Quarry	0	extripated	2011	2011		Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
39	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	?	<100	2009	2009		Linc	N	small

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
40	**287.000**	AB	Fox Knoll Farm	?	???	2016	2016		Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
41	**291.000**	C	Gunpowder Creek	82	???	2012	2010		Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
42	**292.000**	D	Forest City: Adj to Isothermal CC	150	100-500	2010	2010		Ruth	N	Owner, Ruthford County.
43	**293.000**	E	Killian Crossroads	unk	???	2010	2010		Cata	N	No plant count in EO data.
44	**295.000**	B	Hickory Area		100-500	2016				Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
	295.021	*A*	*Hickory Area, Catawba River: Geitner Park*	*> 300*		*2005*	*2005*		*Burk*	*?*	*Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?*
	295.294	*C*	*Hickory Area: Bud Geitner Park Transplant Site*	*153*		*2016*	*2014*		*Burk*	*?*	*Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.*
	295.313	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cata*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.*
	295.314	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cald*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).*
45	**296.000**	CD	UT of Kings Mountain Res	100	100-500	2012	2012		Gast	N	
46	**297.000**	CD	Beaverdam Crk at First Broad River	unk	???	2011	2011		Clev	N	No plant count in EO data.
47	**298.000**	C	Brushy Creek Headwaters	250 300	100-500	2014	2014		Clev	N	
48	**299.000**	D	Lincoln County, SR-1314	27	<100	2014	2014		Linc	N	In DOT study. No formal protection.
49	**300.000**	D	Levan Family Farm	50	<100	2013	2013		Ired	N	
50	**302.000**	A	Rhyne Conservation Preserve		>1000	2016	2014				Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
	302.047	*D*	*NCDOT Project R-617C, South Fork Catawba*	*5*		*2005*	*2005*		*Linc*	*N*	*In DOT ROW, no formal protection.*
	302.262	*A*	*Rhyne Conservation Preserve*	*19,873*		*2016*	*2016*		*Linc*	*Y*	*Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.*
51	**303.000**	AB	Smith Cliff/Henry Fork River	?	100-500	2015	2015		Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
52	**304.000**	B?	Simms Hill/Little River Uplands	200 250	100-500	2015	2015		Burk	Y	Conservation site managed by the Foothills Conservancy of NC
53	**306.000**	D	Fanjoy Road Site	75	<100	2015	2015		Ired	N	
54	**308.000**	C	Glade Creek, Alex County	2,194	>1000	2017	2017		Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
55	**309.000**	D?	South Mountains Pleasant Grove Uplands	?	<100	2016	2016		Burk	N	few
56	**311.000**	A	Collinsville (Hughes) Creek Slopes	200 750	100-500	2016	2016		Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
57	**312.000**	A	Richardson Creek trib above Toms Lake	?	>1000	2016	2016		Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
58	**316.000**	C	Northern Catawba County		???	2017	2017			?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
59	316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	500-1000	2006	2006		Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
	316.315	*D*	*NC-127/Cloninger Mill Road*	*60*		*2017*	*2017*		*Cata*	*?*	*Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A*
60	**317.000**	D	NCDOT TIP R-3603A	30	<100	2017	2017		Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
61	**318.000**	C	Burke County - Drowning Creek UT	356	100-500	2017	2017		Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
62	**320.000**	E	Hickory Creek - UT (Shelby High School)	15	<100	2016	2016		Clev		
63	**321.000**	B	Gunpowder Creek: South of Hudson	2475	>1000	2012	2012		Cald		NCDOT
	Add		*Rock Barn Solar Farm*	*821*					*Cata*	*Y*	*Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded.* *NHP*
			Total	340,470							

* DOT monitors

^ In 2011 5-YR Review as Populations estimated to contain >1,000 plants.

Pops/subpops >1,000 plants, current data.

green Broad River Greenway

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
1	23.000	23.000	A	Mill Creek Forest and Seep	>1000	very high	Polk	2016	
2	29.000	29.000	A	Island Creek Heath Bluff	>1000	very high	Burk	2016	
3	31.000	31.000	C?	NCDOT TIP R-2824	>1000	very high	Cata	2015	
4	32.000	32.000	D	NCDOT TIP R-2824	100-500	moderate	Cata	2015	
5	44.000	44.000	AB	Little Gunpowder Creek Rare Plant Site 1	500-1000	high	Cald	2015	
6	59.000	59.000	C	Third Creek Rare Plant Site	100-500	moderate	Alex	2010	
7	77.000	77.000	CD	Little Gunpowder Creek Rare Plant Site 2	500-1000	high	Cald	2015	
8	93.000	34; 35	D	West Shelby Mesic Slope	100-500	moderate	Clev	2016	
9	96.000	38; 39; 184	A	Murrays Mill/Upper Balls Creek NA	>1000	very high	Cata	2013	
10	98.000	2; 3; 4; 60	CD	Cat Square Heartleaf Forest	100-500	moderate	Linc	2012	
11	99.000	9; 10; 37; 52; 53; 55; 61; 62; 63; 75; 76; 79; 90; 121; 172; 181; 182; 249; 250; 251; 267; 268; 319	A	Big Horse Creek Rare Plant Site	>1000	very high	Ruth	2015	319 [redacted]
12	100.000	14; 49; 51; 73; 74; 149; 233; 235; 236; 237; 238; 239; 240; 241; 246	A	Broad River/Sandy Run NA	>1000	very high	Clev	2012	Removed 50, duplicate of 233
13	125.000	125.000	A	New Hope Springhead Swamp	>1000	very high	Polk	2016	
14	154.000	154.000	C	Facebook Site	>1000	very high	Ruth	2016	
15	157.000	157.000	AB	First Broad River Crooked Run Creek	100-500	moderate	Clev	2010	
16	158.000	158.000	D	P Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork a	100-500	moderate	Cata	2016	
17	176.000	167; 168; 169; 170	A	Davenport Road/Mountain View Rare Plant Site	>1000	very high	Ruth	2016	
18	177.000	16; 107; 122; 163; 164; 165; 166	A	Broad River Floyds Creek	>1000	very high	Ruth	2016	
19	178.000	159; 160; 161; 254; 255; 256; 280; 281; 282; 283; 284; 310	A	Catawba River Hoyle Crk-Micol Crk	>1000	very high	Burk	2013	
20	179.000	30; 162	CD	South Fork Catawba R Clark Crk, Miller Br, Cata Mem Hos	>1000	very high	Cata	2013	
21	206.000	206.000	D	Buffalo Creek Ravine	<100	low	Clev	2007	
22	208.000	208.000	A	Buffalo Creek Potts Creek	<100	low	Clev	2012	
23	214.000	201; 202; 203; 204; 205; 209; 212; 213	A	Buffalo Creek Tributaries N and S of SR 2047	>1000	very high	Clev	2012	
24	216.000	28; 196; 197; 198; 199; 200	A	Buffalo Creek Kings Mountain Res	>1000	very high	Clev	2016	
25	217.000	190; 191; 192; 193; 305	B	Broad River Brushy Creek	>1000	very high	Clev	2016	
26	227.000	227.000	A	Peaked Top Rare Plant Site/Foothills Landfill	>1000	very high	Cald	2014	
27	232.000	46; 231	A?	Buffalo Creek Rare Plant Site	500-1000	high	Clev	2012	
28	243.000	12; 242; 269; 270	AB	Jacob Fork West Corridor	>1000	very high	Cata	2012	
29	245.000	91; 113; 175	AB	Floyds Creek Tributray Rare Plant Site	>1000	very high	Ruth	2012	
30	247.000	13; 56; 80; 106; 114; 115; 173; 174	A	New Bethel Rare Plant Site	>1000	very high	Ruth	2015	Removed 286, duplicate of 106
31	248.000	40; 54	C	Jonas Road Rare Plant Site	100-500	moderate	Ruth	2014	
32	252.000	19; 20	B	South Fork Catawba River, Henry Fork	100-500	moderate	Cata	2007	
33	271.000	271.000	C?	Pott Creek	<100	low	Cata	2012	
34	272.000	272.000	BC	No Business Creek, Boyd Tract	100-500	moderate	Clev	2007	
35	274.000	274.000	A?	Broad River/Sandy Run NA	100-500	moderate	Clev	2012	
36	275.000	275.000	C	Buffalo Shoals Creek	100-500	moderate	Ired	2014	
37	276.000	276.000	A	Cliffside Steam Station	>1000	very high	Clev/Ruth	2016	
38	277.000	277.000	D	Hickory Martin Marietta Quarry	extripated	extripated	Cata	2011	
39	279.000	279.000	D?	Northeast Lincolnton UT Walker Branch	<100	low	Linc	2009	
40	287.000	287.000	AB	Fox Knoll Farm	100-500	moderate	Polk	2016	found newer data - "several hundred clumps"
41	291.000	291.000	C	Gunpowder Creek	<100	low	Cald	2012	
42	292.000	292.000	D	Forest City Adj to Isothermal CC	100-500	moderate	Ruth	2010	
43	293.000	293.000	E	Killian Crossroads	???	unknown	Cata	2010	
44	295.000	21; 294; 313; 314	B	Hickory Area	100-500	moderate	Burk/Cata/Cald	2016	
45	296.000	296.000	CD	UT of Kings Mountain Res	100-500	moderate	Gast	2012	

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
46	297.000	297.000	CD	Beaverdam Crk at First Broad River	???	unknown	Clev	2011	
47	298.000	298.000	C	Brushy Creek Headwaters	100-500	moderate	Clev	2014	
48	299.000	299.000	D	Lincoln County, SR-1314	<100	low	Linc	2014	
49	300.000	300.000	D	Levan Family Farm	<100	low	Ired	2013	
50	302.000	47; 262	A	Rhyne Conservation Preserve	>1000	very high	Linc	2016	
51	303.000	303.000	AB	Smith Cliff/Henry Fork River	100-500	moderate	Burk	2015	
52	304.000	304.000	B?	Simms Hill/Little River Uplands	100-500	moderate	Burk	2015	
53	306.000	306.000	D	Fanjoy Road Site	<100	low	Ired	2015	
54	308.000	308.000	C	Glade Creek, Alex County	>1000	very high	Alex	2017	
55	309.000	309.000	D?	South Mountains Pleasant Grove Uplands	<100	low	Burk	2016	
56	311.000	311.000	A	Collinsville (Hughes) Creek Slopes	100-500	moderate	Polk	2016	
57	312.000	312.000	A	Richardson Creek trib above Toms Lake	>1000	very high	Ruth	2016	
58	316.000	273; 315	C	Northern Catawba County	500-1000	high	Cata	2017	
59	317.000	317.000	D	NCDOT TIP R-3603A	<100	low	Alex	2017	
60	318.000	318.000	C	Burke County - Drowning Creek UT	100-500	moderate	Burk	2017	
61	320.000	320.000	E	Hickory Creek - UT (Shelby High School)	<100	low	Clev	2016	Not processed per agreem
62	321.000	321.000	B	Gunpowder Creek South of Hudson	>1000	very high	Cald	2012	Not processed per agreem
63				Rock Barn Solar Farm	500-1000	high	Cata	2010-2011	I don't think NHP knows about this one. Location Not processed per agreement with

**87 and 277 removed due to extirpation

EO Number	EO Rank	Site Name	Number of Plants	Last Observed	Rank Date	County	Protection	Notes
226.000	B	Catawba River: Lake James		2006	2006			Parent EO
226.045	*D*	*Catawba River: Lake James*	*11*	*2005*	*2005*	*Burk*	*N*	
226.222	*CD*	*Lake James, SW of bridge*	*156*	*2006*	*2006*	*Burk*	*?*	*Likely more plants present, up to 300? Duke has placed a conservation buffer around plants. Unk if this is permanently binding. Ask Duke. Monitoring report in file - Bridgewater Development. Who is contact?*
226.223	*X*	*Lake James, Paddy Creek*	*0*	*2006*	*2006*	*Burk*		
226.224	*BC*	*Lake James, Paddy Creek*	*87*	*2006*	*2006*	*Burk*	*?*	*Likely more plants present, up to 700? Duke has placed a conservation buffer around plants. Unk if this is permanently binding. Ask Duke.*
226.225	*A*	*Lake James, Linville Dam*	*370*	*2005*	*2006*	*Burk*	*N*	
71.000	BC	Knob Creek NA	300	2005	2005	Clev	N	
85.000	D	Buffalo Creek: northeast of SR 1903	267	2005	2005	Clev	N	EO is associated with NC DOT project B-3828. No impact planned. No formal protection.
124.000	D?	Sandy Spring Church Springhead Swamp	20	2005	2005	Polk	N	
130.000	B?	Kross Keys NA	> 111	2005	2005	Polk	N	Likely more present
183.000	CD	Catawba River: North Fork Mountain Creek	200 300	2005	2005	Cata	Y?	The land where the plant populations are located and the land surrounding the plant populations have been designated as common open space. Eastern-most portion of the polygon falls partially within Mitigation Services Easement. MacLeod Ski Lake site.
195.000	D	First Broad River: Hickory Creek	22	2006	2006	Clev	N	In DOT study area. No impacts associated with Shelby bypass. No formal protection.
219.000	D	Smith Cliff/Henry Fork River	31	2005	2005	Burk	N	
229.000	C?	Hogpen Branch Transplant Site	< 500	2005	2007	Ruth	Y	10% of impacted plants were to be moved. 500-550 plants in 2006, all were expected to be impacted by construction. No estimation of remaining plants. CE at Kudzu Farm as mitigation - was this done? Ask Corps. 9/8 - Spoke with David Brown at Corps. No CE at Kudzu Farm, unimpacted plants were preserved on site, likely less than 500. Associated with the quarry??
261.000	B	Leepers Creek Heartleaf Site		2006	2006			Parent EO
261.258	*B*	*Lincoln-Lincoln County Airport and Leepers Creek*	*571*	*2006*	*2006*	*Linc*	*N*	*1,246 totsl plants, 675 plants from this location moved to Rhyne Conservation Preserve (EO 302).*
261.259	*B*	*Lincoln-Lincoln County Airport and Leepers Creek*	*6,461*	*2005*	*2005*	*Linc*	*N*	*No access per NHP. Maybe an airport expansion in the future?*
261.263	*E*	*Leepers Creek Heartleaf Site*	*unk*	*2001*	*2001*	*Linc*	*N*	*presence noted, no count made*
307.000	C	First Broad River: Beaverdam Creek tribs		2006	2006		?	Parent EO
307.036	*CD*	*First Broad River: Beaverdam Creek, UT*	*?*	*1997*	*1997*	*Clev*	*N*	*sparse*
307.187	*C*	*First Broad River: Beaverdam Creek, Ravine*	*264*	*2001*	*2001*	*Clev*	*N*	*In DOT study area, no formal protection.*
307.188	*E*	*First Broad River: Beaverdam Creek, trib N of SR 1316*	*471*	*2000*	*2000*	*Clev*	*Y*	*NCDOT mitigation site. Cows removed? Portions of Sites 1 and 2 are contained within the DOT ROW. Per 2015 draft report, 471 plants in entire EO. 313 plants in protected DOT ROW. Has formal protection in ROW.*
307.189	*D*	*First Broad River: Beaverdam Creek, ravine to UT*	*1*	*2006*	*2006*	*Clev*	*N*	

Element Occurrence Report

EO ID 37217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172766

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 318 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Burke County - Drowning Creek UT NCDOT TIP No. B-4447

Directions

Burke County - Drowning Creek UT. Located in the headwaters area of an unnamed tributary of Drowning Creek, on both sides of I-40 in the vicinity of the I-40 crossing of Berea Church Road [SR-1758] [derived from locations of features in shapefile].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F4	Longview			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 37217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172766

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
100642	2017-04; Carolina II-40 - south side: nc		Polygon	Delimited				GPS, 3-meter accu
100641	2017-04; Carolina II-40 - south side: pc		Polygon	Delimited				GPS, 3-meter accu
100640	2017-04; Carolina II-40 - north side: po		Polygon	Delimited				GPS, 3-meter accu
100639	2017-04; Carolina II-40 - north side: po		Polygon	Delimited				
100638	2017-04; Carolina II-40 - north side: po		Polygon	Delimited				GPS, 3-meter accu
100637	2017-04; Carolina II-40 - north side: po		Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note

Element Occurrence Report

EO ID 37217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172766

Surveyor

Surveyor

Carolina Ecosystems biologists

Survey Date 2017-04

Last Observation Date 2017-04 **First Observation Date** 2017-04

EO Data 2017: 356 plants total at six locations observed by Carolina Ecosystems biologists in April 2017; 230 of the plants are within the NCDOT right-of-way fence (J. Mason NCDOT 2017).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2017-04

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Plants are located in the study area and NCDOT right-of-way for TIP No. B-4447.

Element Occurrence Report

EO ID 37217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172766

Topic Keywords

Keywords
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F17DOT01NCUS	N.C. Department of Transportation. 2017. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2017.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	5/16/2017 12:00:00AM
Transcribed By	Mason	**Transcription Date**	5/16/2017 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	5/16/2017 1:22:15PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.33334234208
Hectares	0.539585335013
WATERSHED	190 - 03050101
MAPSHEET	39023 - 35081-F4
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 37217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172766

Record Create User	SCM	**Record Create Date**	5/16/2017 1:22:15PM
Last Modified By	SCM	**Last Modified Date**	5/16/2017 1:48:23PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 37216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172759

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 317 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Southern Alexander County - Catawba River: NC-127/Chigger Ridge Road
NCDOT TIP No. R-3603A

Directions

Southern Alexander County - Catawba River: NC-127/Chigger Ridge Road. "On wooded slope, east of N.C. Route 127, on wooded slope at the intersection of N.C. Route 127 and Chigger Ridge Road [SR-1139]. Population is located approximately 50 feet into forested area." (Smail 2016).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Alexander (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 37216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172759

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
100632	2016-05-05; E.J. Sm	NC-127/Chigger Ri	Point	Estimated	10.00	Meters		GPS, 10-meter acc
100635	2017-05-02; J. Mas	NC-127/Chigger Ri	Polygon	Delimited				

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Edward J. Smail, Michael Baker International
Jim Mason, NCDOT
Bill Barrett, NCDOT
Jeff Hemphill, NCDOT

Element Occurrence Report

EO ID 37216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172759

Survey Date 2017-05-02
Last Observation Date 2017-05-02 **First Observation Date** 2016-05-05
EO Data 2017: About 30 clumps, in flower, observed by J. Mason et al. on 02 May 2017; entire population surveyed (J. Mason 2017, pers. comm. with S. Mason 2017).
2016: Partial survey - about 20 clumps, in flower, observed by Smail on 05 May 2016; population occurrs over approximatley 2,500 sq ft (Smail 2016).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context 0.25 acre suitable habitat (Smail 2016).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2017-05-02
EO Rank Comments DRY-MESIC OAK–HICKORY FOREST (PIEDMONT SUBTYPE); Hibriten soils; North facing slope; mid-slope, dry, closed canopy. Associated species: Fagus grandifolia, Kalmia latifolia, Acer rubrum, Quercus alba, Carya tomentosa. Illex opaca, Pinus virginiana (Smail 2016).
EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics This occurrence is in the study area for NCDOT TIP No. R-3603A.
Topic Keywords

Keywords
NC DOT

Element Occurrence Report

EO ID 37216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172759

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F17DOT01NCUS	N.C. Department of Transportation. 2017. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2017.	N
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	5/16/2017 12:00:00AM
Transcribed By	Mason	**Transcription Date**	5/16/2017 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	5/16/2017 11:56:08AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010904
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.144467658461
Hectares	0.0584640774008
WATERSHED	190 - 03050101
MAPSHEET	38658 - 35081-G3
COUNTY	1818 - NCALEX

Record Maintenance

Element Occurrence Report

EO ID 37216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172759

Record Create User	SCM	**Record Create Date**	5/16/2017 11:56:08AM
Last Modified By	SCM	**Last Modified Date**	5/16/2017 12:22:23PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 37215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172758

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 316 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Northern Catawba County: Parent EO

Directions

Northern Catawba County: Parent EO. This is a parent EO of sub EOs 273 and 315, located in drainages on the south side of the Catawba River. See sub EOs for details.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 37215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172758

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

Parent EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
100636	Northern Catawba		Polygon	Delimited				

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2017-05-02

Last Observation Date 2017-05-02 **First Observation Date** 2006-09

EO Data This is a parent EO; see each sub EO for details.

Element Occurrence Report

EO ID 37215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172758

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2017-05-02
EO Rank Comments Rank based on sub EOs, when taken together.

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2251	Catawba County Open Space		N - No	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary

Element Occurrence Report

EO ID 37215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172758

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	5/16/2017 12:00:00AM
Transcribed By	Mason	**Transcription Date**	5/16/2017 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	5/16/2017 11:26:59AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010904
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	10.6676638728
Hectares	4.31705707
WATERSHED	190 - 03050101
MAPSHEET	38658 - 35081-G3
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	SCM	**Record Create Date**	5/16/2017 11:26:58AM
Last Modified By	SCM	**Last Modified Date**	5/16/2017 11:37:03AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 37214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172756

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 315 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 37215 **Parent EO Shape ID** 172,758.00 **Parent EO Number** 316

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
NCDOT TIP No. R-3603A
NC-127/Cloninger Mill Road (Sub EO of EO 316)

Directions

NC-127/Cloninger Mill Road. "On wooded slope, east of N.C. Route 127, approximately 800 feet south of intersection of N.C. Route 127 and Cloninger Mill Road [SR-1400]. Population is approximately 100 feet into forested area." (Smail 2016).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 37214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172756

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

New EO created for data management purposes.

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
100633	2016-05-05; E.J. Sm	NC-127/Cloninger I	Point	Estimated	1.00	Meters		GPS, 10-meter acc
100634	2017-05-02; J. Mas	NC-127/Cloninger I	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Edward J. Smail, Michael Baker International
Jim Mason, NCDOT
Bill Barrett, NCDOT
Jeff Hemphill, NCDOT

Element Occurrence Report

EO ID 37214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172756

Survey Date 2017-05-02
Last Observation Date 2017-05-02 **First Observation Date** 2016-05-05
EO Data 2017: About 60 clumps, in flower, observed by J. Mason et al. on 02 May 2017; entire population surveyed (J. Mason 2017, pers. comm. with S. Mason 2017).
2016: Partial survey - about 20 clumps, in flower, observed by Smail on 05 May 2016; population occurrs over approximatley 2,500 sq ft (Smail 2016).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context 0.25 acre suitable habitat (Smail 2016).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2017-05-02
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description DRY-MESIC OAK–HICKORY FOREST (PIEDMONT SUBTYPE); Fairview soils; North facing slope; mid-slope, dry, closed canopy. Associated species: Fagus grandifolia, Acer rubrum, Quercus alba, Carya tomentosa (Smail 2016).

	feet	meters
Min. Elevation		
Max. Elevation		
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2251	Catawba County Open Space		Y - Yes	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	City of Hickory	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics This occurrence is in the study area for NCDOT TIP No. R-3603A.

Element Occurrence Report

EO ID 37214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172756

Topic Keywords

Keywords
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N
F17DOT01NCUS	N.C. Department of Transportation. 2017. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2017.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	5/16/2017 12:00:00AM
Transcribed By	Mason	**Transcription Date**	5/16/2017 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	5/16/2017 11:23:20AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010904
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	0.168932937896
Hectares	0.0683648400057
WATERSHED	190 - 03050101
MAPSHEET	38658 - 35081-G3
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 37214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 172756

Record Create User	SCM	**Record Create Date**	5/16/2017 10:58:04AM
Last Modified By	SCM	**Last Modified Date**	5/16/2017 12:22:21PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36703 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161725

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 314 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 30023 **Parent EO Shape ID** 119,751.00 **Parent EO Number** 295

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
NCDOT TIP U-4700

Directions

NCDOT TIP U-4700: This occurrence is located on the north side of the Catawba River in the US 321 corridor near its intersection with SR 1758.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Caldwell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G4	Granite Falls			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36703 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161725

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

EO Specifications Version Used

Reason for Creating a New EO

Separation Barrier

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
90172	2012, NCDOT	NCDOT TIP U-470	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2012

Last Observation Date 2012 **First Observation Date** 2012

EO Data 2012: report from NCDOT pending

Element Occurrence Report

EO ID 36703 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161725

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2012
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N

Element Occurrence Report

EO ID 36703 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161725

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/26/2016 12:00:00AM
Transcribed By	Amoroso	**Transcription Date**	8/26/2016 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	8/26/2016 1:53:07PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate 3[redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010804
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	0.792290920615
Hectares	0.320629255019
WATERSHED	190 - 03050101
MAPSHEET	38657 - 35081-G4
COUNTY	1830 - NCCALD

Record Maintenance

Record Create User	JLA	**Record Create Date**	8/26/2016 1:53:07PM
Last Modified By	JLA	**Last Modified Date**	8/26/2016 2:07:40PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36701 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161718

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 313 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 30023 **Parent EO Shape ID** 119,751.00 **Parent EO Number** 295

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
NCDOT TIP U-4700 US 321 corridor

Directions

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36701 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161718

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

EO Specifications Version Used

Reason for Creating a New EO

Separation Barrier

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
90168	2012, NCDOT	NCDOT TIP U-470	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor

Survey Date 2012

Last Observation Date 2012 **First Observation Date** 2012

EO Data 2012: GPS points with file date of 2012 submitted by NCDOT with rare plant form pending (2016).

Element Occurrence Report

EO ID 36701 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161718

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2012
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N

Element Occurrence Report

EO ID 36701 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161718

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/25/2016 12:00:00AM
Transcribed By	Amoroso	**Transcription Date**	8/25/2016 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	8/25/2016 2:40:45PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requests
LATITUDE_DD	Not processed per agreement with Plaintiff/Requests
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requests
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requests
UTM_EASTING	Not processed per agreement with Plaintiff/Requests
UTM_NORTHING	Not processed per agreement with Plaintiff/Requests
UTM_ZONE	Not processed per agreement with Plaintiff/Requests
Acreage	2.34188586896
Hectares	0.947729049982
WATERSHED	190 - 03050101
MAPSHEET	38658 - 35081-G3
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	JLA	**Record Create Date**	8/25/2016 2:40:45PM
Last Modified By	JLA	**Last Modified Date**	8/25/2016 2:45:15PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36696 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161705

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 312 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Richardson Creek tributary above Toms Lake

Directions

Richardson Creek tributary above Toms Lake: This occurrence is located along an unnamed tributary to Richardson Creek that is dammed for a farm pond and a fishing pond called Toms Lake and is about 0.1 mile south of SR 1139 (Toms Lake Road).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36696 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161705

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

EO is located within 2.0 kilometers of another known EO of the same species, however it is separated by unsuitable habitat.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

The population extends northeast from the northeast boundary of the property in the drainage network, so the area of suitable habitat here may be another 1-2 acres, depending on current land use and microtopography on the adjacent property (Tuttle 2016).

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
90154	2016: Tuttle	Richardson Creek tı	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type **EO Survey Note**

Qualitative ground survey

Surveyor

Surveyor

Pam Torlina, Pacolet Area Conservancy
Julie Tuttle
Bob and Linda Allard, landowners

Element Occurrence Report

EO ID 36696 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161705

Survey Date 2016-08-03
Last Observation Date 2016-08-03 **First Observation Date** 2006-11-14
EO Data 2016: Several thousands of clumps estimated, plants and habitat appear in excellent condition on 3 August 2016 (Tuttle 2016).
2015: Site visit (Torlina 2016).
2013: Plants in flower (Torlina 2016).
2006: Presence noted (Torlina 2016).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Plants and habitat appear in excellent condition.

Condition Rating
Size of EO Several thousands of clumps estimated.
Landscape Context Excellent quality habitat.

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-08-03
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Moist confluence of a network of intermittent/underground, small drainage areas within Dry-Mesic Oak-Hickory Forest (Piedmont Subtype). The focal area where the population occurs consists of numerous narrow, relatively shallow drainage channels with associated drainage depressions/pits and more open surrounding "slopes". Clumps are most frequent along the edges of the drainage depressions and immediately adjacent but also extent onto the surrounding open slopes. Habitat quality is excellent. Adjacent upland areas on the property are more disturbed, with more abundant pine and smaller average tree diameter. Overall average tree diameter is 12-18", and many large trees are present, primarily Quercus alba (maximum 36-40" and many 24") but other species as well. Note: Pam Torlina's description includes Fagus grandifolia as a significant component of the forest; my survey was casual and this species was most likely present, but I did not observe it as abundant or co-dominant.(Tuttle 2016) Mesic Mixed Hardwood Forest. Major associated tree species include Liriodendron tulipifera, Quercus spp., Fagus grandiflolia, and Acer rubrum with an understory of Ilex opaca and Cornus florida, with shrubs including Vaccinium sp., and herbs including Viola spp., Hexastylis spp., and more (Torlina 2016).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
1202	Pacolet Area Conservancy Preserve		N - No	N

More Management
Management Comments

Element Occurrence Report

EO ID 36696 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161705

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Allard	2016

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Invasive species observed: Ligustrum sinense (rare), Microstegium vimineum (abundant in places but not dominant), Rosa multiflora (1 individual), Lonicera japonica (not abundant), and Magnolia grandiflora (1 individual) (Tuttle 2016).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.	N
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N

Specimen

Specimen Description
Herb.NCU Tuttle s.n.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/23/2016 12:00:00AM
Transcribed By	Amoroso	**Transcription Date**	8/23/2016 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	8/22/2016 4:17:58PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 36696 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161705

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
Acreage	1.61448816854
Hectares	0.653361189995
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	JLA	**Record Create Date**	8/22/2016 4:17:58PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:47PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36693 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161697

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 311 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Collinsville (Hughes) Creek Slopes

Directions

Collinsville (Hughes) Creek Slopes: This occurrence is located in Polk County, North Carolina and occurs along Collinsville (Hughes) Creek on slopes above the creek about 0.3 miles south of SR1521 (Collinsville Road).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Polk (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35082-B1	Fingerville West			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36693 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161697

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

EO is not located within 1.0 kilometers of another known EO of the same species. Unsuitable habitat occurs between this and the next nearest occurrence.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Other areas of suitable habitat may occur along Collinsville (Hughes Creek), depending on drainage, microtopography, and land use.

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
90155	2016; Tuttle	Collinsville (Hughe	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Julie Tuttle
Zach Murrell, Appalachian State University
David Campbell
Pam Torlina, Pacolet Conservancy

Element Occurrence Report

EO ID 36693 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161697

Survey Date 2016-08-04
Last Observation Date 2016-08-04 **First Observation Date** 2007-11-28
EO Data 2016: Several hundred up to perhaps 750 clumps observed on 4 August 2016 over 0.5-0.75 acre. Plants and habitat appear in excllent condition (Tuttle 2016).
2015: Occurrence visted by David Campbell, report is pending (Torlina 2016).
2012: Zach Murrell visited the occurrence on 4 March 2012 to collect samples for genetic study funded by NCDOT (Torlina 2016).
2007: present, no data provided (Torlina 2016).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Plants and habitat appear in excellent condition.

Condition Rating
Size of EO Several hundred up to perhaps 750 clumps
Landscape Context good to excellent quality habitat with few invasive species.

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-08-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description North-facing seepy drainage area that flows into Hughes Creek and adjacent moist slopes as well as flats, slopes, and small drainage cuts scattered along Hughes Creek (Tuttle 2016). Dry-mesic Acidic Heath Bluff community type adjacent to Hughes Creek. Upper slopes display good quality examples of mature Virginia Pine with Mountain Laurel, Sourwood, and Dwarf Pawpaw. A seepage area contains a sizeable population of Dwarf-flowered Heartleaf, with Virginia Sweetspires and Small Green Wood Orchid. Lower slopes have many small areas of seepage with patches of Sphagnum, Netted Chain Fern, and American Royal Fern. During a site visit, female Diana Fritillaries were observed ovipositing on Tall White Violet. (D. Cambell from Torlina 2016).

Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
1201	Pacolet Area Conservancy Easement		Y - Yes	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Charles and Jackie Harris	2016

Owner Comments
OwnerInfo_BCD N

Element Occurrence Report

EO ID 36693 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161697

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.	N
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 8/19/2016 12:00:00AM

Transcribed By Amoroso **Transcription Date** 8/19/2016 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 8/19/2016 4:18:17PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Not Reviewed **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate 3[redacted] **Y Coordinate** 1[redacted]

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501051203
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	0.367627004285
Hectares	0.148773600002
WATERSHED	194 - 03050105
MAPSHEET	40481 - 35082-B1
COUNTY	1891 - NCPOLK

Record Maintenance

Element Occurrence Report

EO ID 36693 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161697

Record Create User	JLA	**Record Create Date**	8/19/2016 4:18:17PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36661 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161576

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 310 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Mcgalliard Creek Slopes; Lake Rhodhiss

Directions

South side of Lake Rhodhiss, about half way between the towns of Drexel and Rutherford College; at the northern end of end of Laurel Street (SR 1545) and to the east. Along north-facing slopes, south of Mcgalliard Creek where it meets Lake Rhodhiss on CWMTF Rhodhiss Park tract (Robinson 2016).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36661 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161576

Representation Accuracy

Represenstation Accuracy Very High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

Part of a parent/sub relationship

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
90067	2016-04-05; Padge	Lake Rhodhiss Park	Polygon	Delimited				GPS. 7-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2016

Surveyor

Surveyor
James Padgett, NCNHP

Survey Date 2016-04-05

Last Observation Date 2016-04-05 **First Observation Date** 2016-04-05

EO Data Padgett surveyed the Lake Rhodhiss Park tract on 5 April 2016 and estimated 1500-2000 plants (Padgett 2016).

Element Occurrence Report

EO ID 36661 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161576

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 1500-2000 individuals (Padgett 2016)
Landscape Context Mesic Mixed Hardwoods, and mixed pine woodlands

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-04-05
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Mesic Mixed Hardwoods, and mixed pine woodlands (Padgett 2016).
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area 23.00 **acres** 9.31 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments This tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F16PAD01NCUS	Padgett, J.E. Field Survey and Field Notes from 2016.	N

Element Occurrence Report

EO ID 36661 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161576

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/18/2016 12:00:00AM
Transcribed By	Robinson	**Transcription Date**	7/18/2016 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	7/18/2016 12:10:04PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010801
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	22.9195122667
Hectares	9.27521186
WATERSHED	190 - 03050101
MAPSHEET	38656 - 35081-G5
MAPSHEET	39022 - 35081-F5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	LGR	**Record Create Date**	7/18/2016 12:08:34PM
Last Modified By	LGR	**Last Modified Date**	7/18/2016 1:26:20PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36589 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161215

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 309 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
3235	South Mountains Pleasant Grove Uplands	N

Survey Site

Survey Site Name
South Mountains Pleasant Grove Uplands

Directions

South Mountains Pleasant Grove Uplands: Burke County, headwaters of a tributary to Little River, approximately 1 mile west of the intersection of Baptist Camp Road and Old NC 18 (SR 1924). 0.8 miles southeast of Butler Knob and 1.0 mile northwest of Brushy Knob.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36589 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161215

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Entire population not surveyed (Bloom 2016).

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
89787	2016; Bloom	Little River Upland	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2016

Surveyor

Surveyor
Sean Bloom, CLC

Survey Date 2016-05-06

Last Observation Date 2016-05-06 **First Observation Date** 2016-05-06

EO Data Sean Bloom obsered a few plants along the slope on 06 May 2016, entire area not thoroughly surveyed (Bloom 2016).

Element Occurrence Report

EO ID 36589 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161215

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Few plants observed
Landscape Context Chestnut Oak Forest (Heath Subtype) and Acidi Cove Forest (Bloom 2016).

EO Rank D? - Possibly poor estimated viability **EO Origin Subrank**

EO Rank Date 2016-05-06
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Found in a Chestnut Oak Forest (Heath Subtype) and Acidic Cove Forest. Quercus montana canopy with Nyssa sylvatica and Oxydendrum arboretum in subcanopy. Very sense shrub layer dominated by Kalmia latifolia. Herbaceous layer was sparse but included Galax urceolata, Medeola virginiana, and Viola hastata (Bloom 2016).

Min. Elevation		**feet**		**meters**
Max. Elevation		**feet**		**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 36589 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161215

References

Reference Code	Full Citation	EO Reference Primary
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/27/2016 12:00:00AM
Transcribed By	Robinson	**Transcription Date**	5/31/2016 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	5/31/2016 4:23:14PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate 3[redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020201
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
UTM_NORTHING	
UTM_EASTING	
UTM_ZONE	
LATITUDE_DMS	
Hectares	0.406898239994
WATERSHED	191 - 03050102
MAPSHEET	39389 - 35081-E5
Acreage	1.00546589594
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	LGR	**Record Create Date**	5/31/2016 4:23:14PM
Last Modified By	LGR	**Last Modified Date**	7/27/2016 3:05:45PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161072

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 308 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Glade Creek, Alexander County

Directions

Alexander County, along Glade Creek, near the DOT Bridge #139 on County Home Road (SR 1609), approximately 0.8 miles northeast of Millersville, NC in south-central Alexander County (Smith 2014).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Alexander (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G2	Millersville			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161072

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Mapped from pdf maps provided by DOT, shapefiles not provided (Robinson 2016).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Plants may extend beyond the survey boundary.

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
89698	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu
89697	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu
89696	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu
89695	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu
89694	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu
89693	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu
89692	2014, NCDOT	Glade Creek, DOT :	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2014

Element Occurrence Report

EO ID 36541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161072

Surveyor

Surveyor

Alexander P. Smith, Axiom Environmental
Scott Davis, Axiom Environmental
Kenan Jernigan, Axiom Environmental
Phillip Perkinson, Axiom Environmental

Survey Date 2015-03

Last Observation Date 2015-03 **First Observation Date** 2014-08-14

EO Data Axiom Environmental biologists observed significant damage and disturbance to site 5 (the large central part of the population). Approximately 75-95% of plants in site 5 appear to be covered by debris or destroyed by clearing and construction of an access road to the floodplain of Glade Creek (Axiom Environmental 2015).
Smith, Davis, Jernigan, and Perkinson observed a total of 1363 plants on 14 August 2014 in 8 separate sites. Site 1: 77 individuals in 0.4 acres; Site 2: 128 individuals in 0.16 acres; Site 3: 74 individuals in 0.07 acres; Site 4: 50 individuals in 0.04 acres; Site 5: 947 individuals in 2.08 acres; Site 6: No information provided; Site 7: 38 indivuals in 0.02 acres; Site 8: 49 indivuals in 0.04 acres (Smith 2014).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2015-03

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Site 1: Soils are mapped Fairview sandy loam, 15 to 25 percent slopes. Natural Communities occupied by this site include Mesic Mixed Hardwood Forest: Piedmont Subtype and disturbed/maintained land - most Hexastylis plants occur within 30 feet of the roadside wood-line. The Mesic Mixed Hardwood Forest provides medium quality habitat (generally appropriate vegetation, though of somewhat low diversity, some soils are disturbed from road installation), and maintained/disturbed land provides excessive sunlight and disturbed soils, providing low quality habitat. Associated species: Forest- Canopy: Fagus grandifolia, Quercus alba; Sub-canopy: Oxydendron arboreum, Carpinus caroliniana, Kalmia latifolia, Acer rubrum; Shrub: C. caroliniana, O. arboreum
Herb/vine: Smilax rotundifolia, Toxicodendron radicans, Viola hastate, Hexastylis heterophylla; Roadside- O. arboreum, C. caroliniana, S. rotundifolia (Smith 2014).

Min. Elevation	3,231.63	**feet**	985.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	6.70	**acres**	2.71	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Element Occurrence Report

EO ID 36541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161072

Protection Comments This population was significantly damaged in early 2015 or late 2014 by the construction of an access road going through the largest part of the population (Axiom Environmental 2015).
Protection / management needs and opportunities: A narrow stretch of natural forest is bounded to each side by maintained road shoulder/utility line right-of-way and a residential yard.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	J.B Cox & T.M. Cox, 1886 County Home Road, Taylorsville,	

Owner Comments Plants fall partially on DOT right-of-way and private ownership (Cox property).

OwnerInfo_BCD N

Additional Topics

General Comments No invasive species noted (Smith 2014).

Additonal Topics Hexastylis heterophylla co-occurs with H. naniflora at this location.

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N
F14CON01NCUS	2014. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	5/10/2016 12:00:00AM
Transcribed By	Robinson	**Transcription Date**	5/10/2016 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	8/25/2016 1:52:10PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 36541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 161072

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501011004
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.4405256012
Hectares	0.987647194998
WATERSHED	190 - 03050101
MAPSHEET	38659 - 35081-G2
COUNTY	1818 - NCALEX

Record Maintenance

Record Create User	LGR	**Record Create Date**	5/10/2016 1:42:02PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:15:34PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 36095 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159555

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 307 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

First Broad River: Beaverdam Creek tributaries Parent EO

Directions

First Broad River: Beaverdam Creek tributaries. This is a parent EO for sub EOs 36, 187, 188, and 189. Occurrences are approximately 5 km west of Shelby, north of Hwy 74, east of Washburn Switch Road (SR 1313), and west of Westlee Street (SR 1319); along tributaries to Beaverdam Creek (Robinson 2015).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North			
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 36095 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159555

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

Separation Barrier

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Areas in between the subEOs have not been well surveyed and could have suitable habitat and additional plants.

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
88699	Parent EO 307	First Broad River: E	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2006-04-06

Last Observation Date 2006-04-06 **First Observation Date** 1997-06-04

EO Data See each subEO for specific information.

Element Occurrence Report

EO ID 36095 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159555

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2006-04-06
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary

Element Occurrence Report

EO ID 36095 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159555

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	Robinson	**Transcription Date**	10/14/2015 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	10/14/2015 3:34:54PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050704
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reed
LATITUDE_DD	Not processed per agreement with Plaintiff/Reed
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reed
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reed
UTM_EASTING	Not processed per agreement with Plaintiff/Reed
UTM_NORTHING	Not processed per agreement with Plaintiff/Reed
UTM_ZONE	Not processed per agreement with Plaintiff/Reed
Acreage	21.6929484431
Hectares	8.77883832504
WATERSHED	194 - 03050105
MAPSHEET	40120 - 35081-C6
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	LGR	**Record Create Date**	10/14/2015 3:24:07PM
Last Modified By	JLA	**Last Modified Date**	10/28/2015 10:56:20AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 35871 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159079

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 306 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Fanjoy Road Site, Statesville

Directions

Eastern Iredell County, approximately 0.3 miles north of Hwy 70, 0.15 miles east of Fanjoy Road, along north/northeast facing slopes in the headwaters of an unnamed tributary to Fourth Creek, upstream of an 8-acre pond on site (Campbell 2015).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Iredell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35080-G7	Statesville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03040102 - South Yadkin

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 35871 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159079

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
88449	Campbell; 2015	Fanjoy Road site	Point	Estimated	50.00	Meters		GPS. 7-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2015

Surveyor

Surveyor
David Campbell, HARP

Survey Date 2015

Last Observation Date 2015 **First Observation Date** 2015

EO Data Campbell observed at least 75 individuals confined to one area of north/northeast facing slopes above a wetland-stream complex (Campbell 2015).

Element Occurrence Report

EO ID 35871 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159079

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 75 (2015)
Landscape Context Remnant forested area along riparian corridors (2015).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2015
EO Rank Comments D-rank based on current rank specs, there are less than 100 clumps in a fragmented landscape (Robinson 2015).

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U15CAM01NCUS	Cambell, David. Inventory Report on the Fanjoy Road Site in Statesville, Iredell County, North Carolina. August 11, 2015.	N

Element Occurrence Report

EO ID 35871 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159079

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	9/4/2015 12:00:00AM
Transcribed By	Robinson	**Transcription Date**	9/4/2015 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	9/4/2015 1:51:15PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 2 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030401020402
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	1.92823069051
Hectares	0.780328480004
WATERSHED	179 - 03040102
MAPSHEET	38662 - 35080-G7
COUNTY	1865 - NCIRED

Record Maintenance

Record Create User	LGR	**Record Create Date**	9/4/2015 1:51:15PM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 4:49:29PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 35870 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159075

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 305 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22256 **Parent EO Shape ID** 61,762.00 **Parent EO Number** 217

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Washburn Switch Business Park

Directions

Cleveland County, Approximately 0.8 miles north of the community of Ora. The Washburn Switch tract is on the south side of Farmville Road (SR 1342), and east of Washburn Switch Road (SR 1313) and the railroad tracks. Plants occur along tributaries to Brushy Creek. Plants were dug up and rescued from three locations (A, B, C) along the tributaries and moved to a wooded transplant site in the southeast corner of the property (see source features). One location, approximately 375 feet southeast of Jordan Drive, was left undisturbed (Riddle 2015).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 35870 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159075

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

Part of a rescued and augmented population.

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
88442	2015; ClearWater EWashburn Switch tr		Polygon	Delimited				1:24,000 topos (di
88444	2015; ClearWater EWashburn Switch (A		Polygon	Delimited				1:24,000 topos (di
88445	2015; ClearWater EWashburn Switch (I		Polygon	Delimited				1:24,000 topos (di
88446	2015; ClearWater EWashburn Switch ((		Polygon	Delimited				1:24,000 topos (di
88447	2015; ClearWater EWashburn Switch tr		Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Clement Riddle, ClearWater Environmental

Element Occurrence Report

EO ID 35870 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159075

Survey Date 2015-09-16
Last Observation Date 2015-09-16 **First Observation Date** 2015
EO Data Riddle observed approximately 70 plants in the northwest corner of the Washburn Switch Business Park tract that were left in place. 23 plants (location A), 68 plants (location B), and 35 plants (location C) (total of 126 plants) were rescued and moved to a wooded transplant site in the southeast corner of the property on September 15 and 16, 2015 (Riddle 2015).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2015
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Cleveland County	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics A PCP permit was submitted during summer 2015 to rescue and move plants to the Broad River Greenway, many miles away. A solution was found to tranplant plants within the property, near an existing Hexastylis naniflora population, which precluded the need for a state permit (Mara Alexander 2015).

Element Occurrence Report

EO ID 35870 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159075

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F15CON01NCUS	2015. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	2/2/2016 12:00:00AM
Transcribed By	Robinson	**Transcription Date**	9/3/2015 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	2/2/2016 10:58:57AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050701
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reque
LATITUDE_DD	Not processed per agreement with Plaintiff/Reque
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reque
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reque
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
Acreage	3.12645874904
Hectares	1.26523491999
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 35870 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 159075

Record Create User	LGR	**Record Create Date**	9/3/2015 3:55:25PM
Last Modified By	LGR	**Last Modified Date**	2/2/2016 11:41:52AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 35185 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 154032

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 304 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Simms Hill/Little River Uplands

Directions

Simms Hill: Located in southern Burke County, approximately 1.3 miles southwest of Old NC Highway 18 and north of South Mountains State Park.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F6	Morganton South			
35081-F5	Valdese			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 35185 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 154032

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

No known occurrence within 2km.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
84125	2015-05-05, Padge	Simms Hill/Little R	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2015

Surveyor

Surveyor
James Padgett, NCNHP
Andrew Kota, FCNC

Survey Date 2015-05-05

Last Observation Date 2015-05-05 **First Observation Date** 2015-03

Element Occurrence Report

EO ID 35185 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 154032

EO Data Padgett and Kota observed plants at two different locations along west and north-facing slopes in Acidic Cove Forest on 05 May 2015. Estimated population size is 200-250 individuals (Padgett 2015).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Good over all condition with extensive forest surrounding the occurrences.

Condition Rating

Size of EO 5.5 acres mapped with plants scattered within that 5.5 acres.

Landscape Context Very good landscape context with plants occurring in a large matrix and moasic forest.

EO Rank B? - Possibly good estimated viability **EO Origin Subrank**

EO Rank Date 2015-06-01

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Plants scattered on slopes of Acidic Cove with Kalmia latifolia, Liridendron tulipifera, Acer rubrum, Quercus rubra, Smilax rotundifolia and others.

Min. Elevation 1,400.00 **feet** 426.72 **meters**

Max. Elevation 1,540.00 **feet** 469.39 **meters**

Observed Area 5.50 **acres** 2.23 **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No

Protection Comments This site is afforded protection as part of a conservation site managed by Foothills Conservancy of North Carolina.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments Exotic and invasive species managment in some locations should be considered (Padgett 2015).

Ownership

Owner Type	Owner Name	Owner Note
Private organization	Foothills Conservancy of North Carolina	per. Andrew Kota.

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries Y - Yes **Image** N

Element Occurrence Report

EO ID 35185 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 154032

References

Reference Code	Full Citation	EO Reference Primary
F15PAD01NCUS	Padgett, J. E. Field survey and field notes from 2015.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Finnegan **Version Date** 2/29/2016 12:00:00AM
Transcribed By JEP **Transcription Date** 6/1/2015 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JEP **Digital Mapping Date** 5/6/2015 7:59:38PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Not Reviewed **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020101
LONGITUDE_DD	Not processed per agreement with Plaintiff/Re
LATITUDE_DD	Not processed per agreement with Plaintiff/Re
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Re
LATITUDE_DMS	Not processed per agreement with Plaintiff/Re
UTM_EASTING	Not processed per agreement with Plaintiff/Re
UTM_NORTHING	Not processed per agreement with Plaintiff/Re
UTM_ZONE	Not processed per agreement with Plaintiff/Re
Acreage	5.51812094273
Hectares	2.23310776501
WATERSHED	191 - 03050102
MAPSHEET	39021 - 35081-F6
MAPSHEET	39022 - 35081-F5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User JEP **Record Create Date** 5/6/2015 7:59:38PM
Last Modified By JTF **Last Modified Date** 2/29/2016 10:58:53AM
Do Not Exchange N
Last Received Date **Last Received Status**
Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 35113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 153818

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 303 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
263	Smith Cliff/Henry Fork River	N

Survey Site

Survey Site Name
Hybrid
Smith Cliff/Henry Fork River

Directions

Smith Cliff/Henry Fork River: Located in Southern Burke County approximately half way betweek Highway 18 and Old highway 18, north of River Road (SR 1922), along slopes of Henry Fork River.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 35113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 153818

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GPS data points and field observations were used to map this occurence (Padgett 2015).

EO Development Details

Separation Distance Used 500 Meters **Separation Distance Type** Custom

Separation Comments

This occurrence is a separate EO from 219, located approximately 1100 meters to the south west due to some unsuitable habitat (Padgett 2015). This population is also a possible hybrid and EO 219 is not documented to show evidence of hybridization, therefore kept as a separate EO (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

This occurrence has some charactistics of both Hexastylis naniflora and Hexastylis heterophylla. This area may be a hybridization zone. All know occurrences in the region have all been mapped as H. naniflora (Padgett 2015).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
83983	2015-04-28, Padge	Smith Cliff/Henry F	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type
Qualitative ground survey

EO Survey Note
James Padgett, NHP and Tom Kenney, FCNC - 2015

Surveyor

Surveyor
James Padgett, NCNHP

Element Occurrence Report

EO ID 35113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 153818

Survey Date 2015-04-28
Last Observation Date 2015-04-28 **First Observation Date** 2015-04-28
EO Data Padgett observed plants along both sides of the river and predominantly along north slopes. Hundreds of plants were observed on 28 April 2015 (Padgett 2015).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Very good
Condition Rating
Size of EO 9.2 acres mapped (large)
Landscape Context Very good overall landscape context.

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**
EO Rank Date 2015-04-19
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Oak hickory forest with a high percentage of pines (mostly white pines) present. The plants occur on north-facing slopes and along both sides of the river. Plants occur in both areas with mountain laurel present and in more open understory with a rich and diverse herbaceous layer present.

Min. Elevation	1,090.00	**feet**	332.23	**meters**
Max. Elevation	1,300.00	**feet**	396.24	**meters**
Observed Area	9.20	**acres**	3.72	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments Much of the areas the occurrence is found has some formal protection as a conservation property owned by Foothills Conservancy of North Carolina.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2231	Foothills Conservancy of North Carolina Preserve		N - No	N
2523	Smith Cliff/Henry Fork River RHA			N

More Management ? - Questionable
Management Comments Registered Heritage Area. There are some very minor exotic plant species issues, especially air potato (Dioscorea batatas) and privet.

Ownership

Owner Type	Owner Name	Owner Note
Private organization	Foothills Conservancy of North Carolina	contact: Tom Kenney

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 35113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 153818

Topic Keywords

Keywords

Documentation

Boundaries Y - Yes **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F15PAD01NCUS	Padgett, J. E. Field survey and field notes from 2015.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 12/18/2015 12:00:00AM

Transcribed By Padgett **Transcription Date** 4/29/2015 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JEP **Digital Mapping Date** 4/29/2015 10:43:31AM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020101
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	9.21278486377
Hectares	3.72828751493
WATERSHED	191 - 03050102
MAPSHEET	39022 - 35081-F5
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 35113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 153818

Record Create User	JEP	**Record Create Date**	4/29/2015 10:40:10AM
Last Modified By	JTF	**Last Modified Date**	12/21/2015 11:12:18PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 34778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 150216

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 302 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2547	Rhyne Conservation Preserve	N

Survey Site

Survey Site Name
South Fork Catawba River: Parent EO

Directions

South Fork Catawba River: Parent EO. This is a parent EO of sub EOs 047 and 262, located south of South Lincolnton, near and along South Fork Catawba River. See each sub EOs for details.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			
35081-D3	Lincolnton West			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 34778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 150216

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. EO 299 occurs about 6 km to the east; EO 279 occurs about 3.5 km to the north (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
80725	Parent EO 302	Rhyne Conservatior	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2016-05-05

Last Observation Date 2016-05-05 **First Observation Date** 1999-03-29

EO Data See each sub EO for details.

Element Occurrence Report

EO ID 34778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 150216

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2014-05-29
EO Rank Comments EO 262 was agumented and is very large, thus is the driver of this parent EO's rank.

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2224	Catawba Lands Conservancy Easement		Y - Yes	N
1266	NC Clean Water Management Trust Fund Easement			N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 34778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 150216

References

Reference Code	Full Citation	EO Reference Primary
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N
F05FRA01NCUS	Franklin, M. A. 2005. Field notebook for site visits conducted in 2005.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
F05WIC01NCUS	Wichmann, B. 2005. Field notebook for field survey/site visits conducted by Brenda Wichmann in 2005.	N
F06CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.	N
F99CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 6/16/2016 12:00:00AM
Transcribed By Mason **Transcription Date** 3/10/2015 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 6/16/2016 10:52:28AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 34778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 150216

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020504
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	29.7408325715
Hectares	12.03570651
WATERSHED	191 - 03050102
MAPSHEET	39755 - 35081-D3
MAPSHEET	39756 - 35081-D2
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	SCM	**Record Create Date**	3/10/2015 3:27:21PM
Last Modified By	LGR	**Last Modified Date**	7/27/2016 3:55:07PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 34003 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 147170

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 300 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Levan family farm

Directions

Draingage west of Bradford Crossroads; population occupying wooded area near [redacted] (Levan 2013).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Iredell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G1	Stony Point			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 34003 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 147170

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
78490	2013-04; Levan	Levan family farm	Point	Estimated	25.00	Meters		

Survey Information

Survey Type

Survey Type **EO Survey Note**

Qualitative ground survey

Surveyor

Surveyor

Byron Levan

Survey Date 2013-04

Last Observation Date 2013-04 **First Observation Date** 2013-04

EO Data ~50 individuals located in drainage area, observed in April 2013 by Levan (Levan 2013).

Element Occurrence Report

EO ID 34003 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 147170

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Approximately 50 individuals
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2013-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F14CON01NCUS	2014. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N

Element Occurrence Report

EO ID 34003 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 147170

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/25/2015 12:00:00AM
Transcribed By	Feldman	**Transcription Date**	10/13/2014 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF2	**Digital Mapping Date**	10/13/2014 4:34:57PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1865 - NCIRED
HUC_12	030501011103
LONGITUDE_DD	Not processed per agreement with Plaintiff/Rep
LATITUDE_DD	Not processed per agreement with Plaintiff/Rep
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Rep
LATITUDE_DMS	Not processed per agreement with Plaintiff/Rep
UTM_EASTING	Not processed per agreement with Plaintiff/Rep
UTM_NORTHING	Not processed per agreement with Plaintiff/Rep
UTM_ZONE	Not processed per agreement with Plaintiff/Rep
Acreage	0.482170154832
Hectares	0.195127640004
WATERSHED	190 - 03050101
MAPSHEET	38660 - 35081-G1

Record Maintenance

Record Create User	MAF2	**Record Create Date**	10/13/2014 4:34:57PM
Last Modified By	LGR	**Last Modified Date**	11/25/2015 1:12:56PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 33240 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 142971

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 299 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
NCDOT
Lincoln County, SR-1314 (Will Schronce Road)

Directions

Lincoln County, SR-1314 (Will Schronce Road). North side of SR-1314, about 0.1 road mile southwest of bridge over Hoyle Creek, on north-facing slope on south side of creek; near [redacted] (Cheely 2014; shapefile also provided).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 33240 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 142971

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
75082	Cheely; 2010	Lincoln County, SR	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Erin Cheely, NCDOT
Michael Turchy, NCDOT

Survey Date 2014-04-01

Last Observation Date 2014-04-01 **First Observation Date** 2010-04-13

Element Occurrence Report

EO ID 33240 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 142971

EO Data 2014: About 27 plants over 0.08 acre, with 50% with early flower buds and 50% vegetative, observed by Cheely and Turchy on 01 April 2014; new leaves forming, some young plants with single leaf (Cheely 2014).
2010: Plants present; discovered by NCDOT on 13 April 2010 (Cheely 2014).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Upper portions of slope indirectly affected by clearcutting since 2010 - there is less shading from mature trees; population appears intact for the time being (Cheely 2014).

Condition Rating

Size of EO About 27 plants (2014).

Landscape Context Patchy suitable habitat nearby (2014).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2014-04-01

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description North-facing slope adjacent to floodplain; with mature oak-hickory-beech forest. Associated species: Rattlesnake plantain (Cheely 2014).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments Hardwood forest partly clearcut since 2010 (Cheely 2014).

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Area surveyed by NCDOT as part of natural resources work for replacement of SR-1314 over Hoyle's Creek [TIP No. B-5155] (Cheely 2014).

Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 33240 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 142971

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	6/17/2014 12:00:00AM
Transcribed By	Mason	**Transcription Date**	6/17/2014 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	6/17/2014 11:04:42AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020601
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	0.0805836957321
Hectares	0.0326111150046
WATERSHED	191 - 03050102
MAPSHEET	39756 - 35081-D2
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	SCM	**Record Create Date**	6/17/2014 11:04:43AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 33039 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141919

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 298 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Brushy Creek Headwaters

Directions

Cleveland County; approximately 9km northwest of Shelby, 0.48 km south of the intersection of NC 226 and east Chatfiled Road (SR 1343). Occurrence is located at the end of a dead end road (Boyd Circle) in wooded area in the headwaters of Brushy Creek.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 33039 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141919

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Mapped using GPS data points and ground survey. Area mapped contains suitable habitat that extends beyond the occurrence (Padgett 2014).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

No known occurrences within 2km, however suitable habitat does exists within 2 km (Padgett 2014).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

There are patches of suitable habitat around this occurrence.

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
74278	Padgett, 2014	Brushy Creek Head	Polygon	Delimited				2012 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2014

Surveyor

Surveyor

Survey Date 2014-04-15

Last Observation Date 2014-04-15 **First Observation Date** 2014-04-15

Element Occurrence Report

EO ID 33039 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141919

EO Data Padgett observed approximately 250-300 plants occurring In wooded area long slopes of small streams, eroded ditches, and flats on April 15, 2014. The habitat is a regenerating to rest with tulip poplar' red maple, willow oak, short leaf pine, and various young oaks (Padgett 2014).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO The overall condition of the EO is fair with it occurring in regeneration wooded area with. Invasive sand erosion issues.

Condition Rating

Size of EO 0.75 acre

Landscape Context Poor overall landscape context with this EO occurring in an isolated wooded patch.

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2014-04-15

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Wooded area with regeneration forest comprised of tulip poplar, red maple, willow oak, short leaf pine,Virginia pine, oaks and a few hickories. Leather wood was present in a small patch of about 40-50 stems. Invasive species are a problem with Japanese honeysucke, multiflora rose, running bush, and privet (Padgett 2014).

Min. Elevation 900.00 **feet** 274.32 **meters**

Max. Elevation 920.00 **feet** 280.42 **meters**

Observed Area 1.30 **acres** 0.53 **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No

Protection Comments This site as no formal protection.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments This site needs management for Lonicera japonica,

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Steve Champion	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Leatherwood occurs with this occurrence

Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 33039 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141919

Boundaries Y - Yes **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 10/13/2015 12:00:00AM
Transcribed By Padgett **Transcription Date** 4/15/2014 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JEP **Digital Mapping Date** 4/15/2014 11:46:59AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Not Reviewed **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050701
LONGITUDE_DD	Not processed per agreement with Plaintiff/Rede
LATITUDE_DD	Not processed per agreement with Plaintiff/Rede
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Rede
LATITUDE_DMS	Not processed per agreement with Plaintiff/Rede
UTM_EASTING	Not processed per agreement with Plaintiff/Rede
UTM_NORTHING	Not processed per agreement with Plaintiff/Rede
UTM_ZONE	Not processed per agreement with Plaintiff/Rede
Acreage	1.32380983424
Hectares	0.535727659999
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User JEP **Record Create Date** 4/15/2014 11:46:59AM
Last Modified By LGR **Last Modified Date** 10/13/2015 3:26:51PM
Do Not Exchange N
Last Received Date **Last Received Status**
Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 32858 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141271

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 297 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Beaverdam Creek at First Broad River

Directions

Located in southern Cleveland County along the east side of Burke Road at the bridge just east of the convergance of Poplar Branch and Hawkin's Branch into Beaver Dam Creek, on the north-facing slope.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B5	Blacksburg North			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 32858 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141271

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Information provided by Charles Horn (Newberry College) through and email exchange in 2011.

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

This occurrence is within 2 km of EO 64, but because EO 64 is unconfirmed to be H. naniflora, it is not combined with that EO (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

This site has had no formal survey work.

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
73828	2011; Horne	Beaverdam Creek a	Polygon	Delimited				

Survey Information

Survey Type

Survey Type
Qualitative ground survey

EO Survey Note
Information provided by Charles Horn (Newberry College) i

Surveyor

Surveyor
Charles Horn (Newberry College)

Survey Date 2011

Last Observation Date 2011 **First Observation Date** 2011

Element Occurrence Report

EO ID 32858 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141271

EO Data Located given in 2011 email of known plants at this location. The site is a steep north-facing slope with oaks and hickories present and heath in the understory (Padgett 2015).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Fair to good overall condition. Forested slope above stream.

Condition Rating
Size of EO Small Mapped at 0.46 acres.
Landscape Context Landscape context along the stream is fair to good with the uplands along the stream developed and/or residential.

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2011
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	610.00	**feet**	185.93	**meters**
Max. Elevation	650.00	**feet**	198.12	**meters**
Observed Area	0.46	**acres**	0.19	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement** N - No
Protection Comments This site/occurence has no formal protection.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords
Hexastylis
dwarf flowered heartleaaf

Documentation

Boundaries Y - Yes **Image** N

Element Occurrence Report

EO ID 32858 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 141271

References

Reference Code	Full Citation	EO Reference Primary

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/25/2015 12:00:00AM
Transcribed By	JEP	**Transcription Date**	8/24/2015 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JEP	**Digital Mapping Date**	4/3/2014 11:29:30PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050704
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reg
LATITUDE_DD	Not processed per agreement with Plaintiff/Reg
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reg
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reg
UTM_EASTING	Not processed per agreement with Plaintiff/Reg
UTM_NORTHING	Not processed per agreement with Plaintiff/Reg
UTM_ZONE	Not processed per agreement with Plaintiff/Reg
Acreage	0.467432182555
Hectares	0.189163385021
WATERSHED	194 - 03050105
MAPSHEET	40485 - 35081-B5
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	JEP	**Record Create Date**	1/31/2014 10:37:58AM
Last Modified By	LGR	**Last Modified Date**	11/25/2015 1:58:24PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 31900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 132255

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 296 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Unnamed tributary of King's Mountain Reservoir; east of South Crowders Creek Forests.

Directions

East of South Crowders Creek Forests. Near [redacted] About 400 m south-southeast of the intersection between Lewis Rd (SR-1112) and Sparrow Springs Rd. (SR-1125). About 1.3 km southeast of Sparrow Springs Lake. (Directions derived from coordinates provided by Wagner). Plants found from 10 m uphill of stream to 30 m downhill of homesite.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Gaston (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B3	Kings Mountain			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 31900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 132255

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

About 16 km from nearest conspecfic EO.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68178	Wagner 2012	East of South Crow	Point	Estimated	50.00	Meters		GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
J. Wagner, ASU
Z. Murrell, ASU
M. Roberts, ASU
T. Jensen, ASU

Element Occurrence Report

EO ID 31900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 132255

Survey Date 2012-03-16
Last Observation Date 2012-03-16 **First Observation Date** 2012-03-16
EO Data Wagner et. al. counted 100 plants on 16 March 2012 (Wagner 2012).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 100 plants
Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-16
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation 860.00 **feet** 262.13 **meters**
Max. Elevation 880.00 **feet** 268.22 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments Privately owned; no protection.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Some plants in population have very small leaves. High morphological diversity across site. Plants vary in size/age (Wagner 2012).

Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 31900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 132255

References

Reference Code	Full Citation	EO Reference Primary
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	12/7/2015 12:00:00AM
Transcribed By	Israel	**Transcription Date**	5/17/2013 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	KAI	**Digital Mapping Date**	5/17/2013 3:57:01PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	1.930915
HECTARES	0.781417
HUC_12	030501011504
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
MAPSHEET	40487 - 35081-B3
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	190 - 03050101
COUNTY	1852 - NCGAST

Record Maintenance

Record Create User	KAI	**Record Create Date**	5/17/2013 3:57:04PM
Last Modified By	LGR	**Last Modified Date**	12/7/2015 3:26:06PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 30023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119751

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 295 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Hickory Area: Parent EO

Directions

Hickory Area: Parent EO. This is a parent EO of sub EOs 021, 294, 313 and 314, located northeast of Hickory, NC. See each sub EO for details.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US
Caldwell (NC)	NC	US
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			
35081-G4	Granite Falls			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 30023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119751

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Nearest records are about 7 km away.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
60578	Parent EO 295	Hickory Area, Geitr	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2016-03-20

Last Observation Date 2016-03-20 **First Observation Date** 1994-04-12

EO Data This is a parent EO; see each sub EO for details.

Element Occurrence Report

EO ID 30023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119751

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 021: 300+ counted, many more present (2005).
294: 187 plants (2011).
Landscape Context Located within a local park

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2011-11-11
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Hickory Parks and Recreation	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 30023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119751

References

Reference Code	Full Citation	EO Reference Primary
F16HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2016. Field survey forms and related documents contributed by HARP biologists in 2016.	N
F15HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2015. Field survey forms and related documents contributed by HARP biologists in 2015.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U06MOY03NCUS	Moye, William S. 2006. Highly Ranked Plants of the South Mountain Region. Unpublished notes sent via email to Misty Franklin in February 2006.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F12HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2012. Field survey forms and related documents contributed by HARP biologists in 2012.	N
F13HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2013. Field survey forms and related documents contributed by HARP biologists in 2013.	N
F14HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2014. Field survey forms and related documents contributed by HARP biologists in 2014.	N
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/26/2016 12:00:00AM
Transcribed By	Mason	**Transcription Date**	2/7/2012 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	8/26/2016 2:11:52PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 30023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119751

Spatial Attributes

Attribute Name	Attribute Value
LONGITUDE_DMS	[redacted]
LATITUDE_DMS	[redacted]
UTM_EASTING	[redacted]
UTM_NORTHING	[redacted]
UTM_ZONE	[redacted]
Acreage	5.80248311262
HUC_12	030501010804
LONGITUDE_DD	[redacted]
LATITUDE_DD	[redacted]
Hectares	2.34818523001
WATERSHED	190 - 03050101
MAPSHEET	38657 - 35081-G4
MAPSHEET	38658 - 35081-G3
COUNTY	1834 - NCCATA
COUNTY	1828 - NCBURK
COUNTY	1830 - NCCALD

Record Maintenance

Record Create User	SCM	**Record Create Date**	2/7/2012 1:59:19PM
Last Modified By	JLA	**Last Modified Date**	8/26/2016 2:12:19PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 30019 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119741

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 294 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 30023 **Parent EO Shape ID** 119,751.00 **Parent EO Number** 295

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Hickory Area: Bud Geitner Park Transplant Site (Sub EO of EO 295)

Directions

Bud Geitner Park Transplant Site. Transplant site is within Bud Geitner Rotary Park, in a northwest-facing headwater, hardwood cove draining to the Catawba River, inside a curve of an existing paved walking trail (HARP 2011).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 30019 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119741

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
60572	2011; HARP	EO 294. Geitner Pa	Polygon	Delimited				2008 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Jim Matthews, HARP
David Campbell, HARP

Survey Date 2016-03-20

Last Observation Date 2016-03-20 **First Observation Date** 2011-11-05

Element Occurrence Report

EO ID 30019 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119741

EO Data 2016: 153 plants total observed on 20 March 2016 by Campbell; 104 plants (99%) survived from the Hickory site (EO 277) and 37 plants had flowers; 49 plants (100%) survived from the Lenoir site (EO 087) and 19 plants had flowers; all plants exhibited vigorous growth (HARP 2016).
2015: 154 plants total observed on 12 April 2015 by Campbell; 107 plants (98%) survived from the Hickory site (EO 277) and 46 plants had flowers; 49 plants (89%) survived from the Lenoir site (EO 087) and 21 plants had flowers; all plants exhibited vigorous growth (HARP 2015).
2014: 156 plants total observed on 09 April 2014 by Campbell; 107 plants survived from the Hickory site (EO 277) and 63 plants had flowers; 49 plants survived from the Lenoir site (EO 087) and 21 plants had flowers; all plants exhibited vigorous vegetative growth (HARP 2014).
2013: 158 plants total observed on 11 May 2013 by Campbell; 109 plants survived from the Hickory site (EO 277) and 92 plants had flowers; 49 plants survived from the Lenoir site (EO 087) and 37 plants had flowers; all plants exhibited vigorous vegetative growth (HARP 2013).
2012: 160 plants total observed on 09 April 2012 by Campbell and Matthews; 111 plants (84%) survived from the Hickory site (EO 277) and 72 plants had flowers; 49 plants (89%) survived from the Lenoir site (EO 087) and 49 plants had flowers; all plants exhibited vigorous growth (HARP 2012).
2011: Total of 187 plants relocated to this site into two plots by HARP biologists on 05, 06, and 11 November 2011 from EOs 087 and 277 (Martin Marietta quarry sites) [no indication a native population was present in this area]. 132 plants from the Hickory site (EO 277) were planted in an area delineated with red painted steel spikes and 55 plants from the Lenoir site (EO 087) were planted in an area delineated with glow orange painted steel spikes (HARP 2011).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Monitoring for survival will begin in March/April 2012 and continue yearly until 2016 (HARP 2012).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 156 plants (2014). 158 plants (2013). 160 plants (2012). 187 plants (2011).

Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank** i - Introduced

EO Rank Date 2014-04-09

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Northwest-facing headwater, hardwood cove draining to the Catawba River; the cove is in an undisturbed natural wooded area (HARP 2011).

Min. Elevation **feet** **meters**

Max. Elevation **feet** **meters**

Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2251	Catawba County Open Space			N

More Management Y - Yes

Element Occurrence Report

EO ID 30019 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119741

Management Comments HARP biologists removed sprigs of English ivy, for the fifth and final year of monitoring (HARP 2016). HARP biologists removed sprigs of English ivy and Japanese honeysuckle again, for the third year (HARP 2014). HARP biologists removed sprigs of English ivy and Japanese honeysuckle during their monitoring on 09 April 2012 (HARP 2012).

Ownership

Owner Type	Owner Name	Owner Note
Local government	Hickory Parks and Recreation	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords
NC DOT
TRANSPLANT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F12HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2012. Field survey forms and related documents contributed by HARP biologists in 2012.	N
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F13HAR01NCUS	HARP (Habitat Assessemnt & Restoration Professionals). 2013. Field survey forms and related documents contributed by HARP biologists in 2013.	N
F14HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2014. Field survey forms and related documents contributed by HARP biologists in 2014.	N
F16HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2016. Field survey forms and related documents contributed by HARP biologists in 2016.	N
F15HAR01NCUS	HARP (Habitat Assessement & Restoration Professionals). 2015. Field survey forms and related documents contributed by HARP biologists in 2015.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/22/2016 12:00:00AM
Transcribed By	Mason	**Transcription Date**	2/7/2012 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JTF	**Digital Mapping Date**	11/6/2012 2:41:56PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Element Occurrence Report

EO ID 30019 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 119741

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	190 - 03050101
UTM_EASTING	[redacted]
LATITUDE_DMS	
UTM_ZONE	
HECTARES	0.596908
LONGITUDE_DD	[redacted]
ACREAGE	1.474986
LATITUDE_DD	[redacted]
UTM_NORTHING	
LONGITUDE_DMS	
MAPSHEET	38658 - 35081-G3
HUC_12	030501010804
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User SCM **Record Create Date** 2/7/2012 12:52:50PM

Last Modified By JTF **Last Modified Date** 4/22/2016 6:13:36PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 29086 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111138

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 293 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	Parent EO Shape ID	Parent EO Number

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Killian Crossroads

Directions

Killian Crossroads: Located along the headwaters of Killian Creek in the triangle formed by NC-150, NC-16, and SR-1855 (E. Maiden Road) just east of Killian Crossroads, near Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ [directions derived from coordinate location] (Tompkins 2010).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E1	Denver			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 29086 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111138

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
55527	Killian Creek head		Point	Estimated	50.00	Meters		GPS, 10-meter acc

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2010?

Last Observation Date 2010? **First Observation Date** 2010?

Element Occurrence Report

EO ID 29086 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111138

EO Data The presence of this occurrence was reported to the USFWS in 2010 by environmental consultants working for Lowe's [unclear at this time if it's Home Improvement or Grocery]. A store is proposed for construction. A Biological Assessment is being written and USFWS is awaiting a copy as of December 2010 [a copy was requested from USWFS by NCNHP in 12-2010] (Tompkins 2010).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO The site has "invasive species issues" (Tompkins 2010).

Condition Rating
Size of EO
Landscape Context Wooded site surrounded by roads and agriculture lands.

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2010?
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Lowe's	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Lowe's is avoiding impacts to Hexastylis naniflora and over and acre of wetlands on the site (Tompkins 2010).
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 29086 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111138

References

Reference Code	Full Citation	EO Reference Primary
F10FWS01NCUS	U.S. Fish and Wildlife Service. 2010. Rare species reports contributed to NCNHP by U.S. Fish and Wildlife Service personel in 2010.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	1/5/2011 12:00:00AM
Transcribed By	Mason	**Transcription Date**	1/5/2011 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	1/5/2011 2:27:58PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1834 - NCCATA
ACREAGE	1.930915
HECTARES	0.781417
LATITUDE_DD	Not processed per agreement with Plain
LATITUDE_DMS	Not processed per agreement with Plain
LONGITUDE_DD	Not processed per agreement with Plain
LONGITUDE_DMS	Not processed per agreement with Plain
MAPSHEET	39393 - 35081-E1
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
WATERSHED	190 - 03050101
HUC_12	030501011303

Record Maintenance

Record Create User	SCM	**Record Create Date**	1/5/2011 2:28:01PM
Last Modified By	BIOTICS_DLINK	**Last Modified Date**	7/28/2015 1:40:54PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 29084 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111129

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 292 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Forest City: Adjacent to Isothermal Community College

Directions

Forest City: Adjacent to Isothermal Community College. Occurrences located on the parcel east of the lake at Isothermal Community College, along the stream that drains the lake and just west of SR-2184 (Daniel Road); found at two locations on the site: the north occurrence is on the north side of the steam (headwater stream to Bracketts Creek), near [redacted]; the south occurrence is on the south side of the stream, near [redacted] [directions derived from coordinate locations] (Thompkins 2010).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 29084 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111129

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
55521	Tomkins; 2010	North occurrence	Point	Estimated	50.00	Meters		GPS, 10-meter acc
55522	Tomkins; 2010	Southern occurrenc	Point	Estimated	50.00	Meters		GPS, 10-meter acc

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Bryan Tompkins, USFWS

Survey Date 2010

Last Observation Date 2010 **First Observation Date** 2010

Element Occurrence Report

EO ID 29084 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111129

EO Data Total of 150 plants observed at both locations by Tompkins in 2010; population observed to be in "2-3 segments" on the site (Tompkins 2010).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Wooded parcel at stream headwaters.

Condition Rating
Size of EO 150 plants (2010).
Landscape Context Parcel surrounded by a major road and development.

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2010
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Rutherford County	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 29084 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 111129

References

Reference Code	Full Citation	EO Reference Primary
F10FWS01NCUS	U.S. Fish and Wildlife Service. 2010. Rare species reports contributed to NCNHP by U.S. Fish and Wildlife Service personel in 2010.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	1/5/2011 12:00:00AM
Transcribed By	Mason	**Transcription Date**	1/5/2011 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	1/5/2011 1:53:41PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
ACREAGE	3.861831
HECTARES	1.562834
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
MAPSHEET	40118 - 35081-C8
HUC_12	030501050502
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	SCM	**Record Create Date**	1/5/2011 1:50:07PM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 4:34:17PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 28659 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 108484

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 291 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	Parent EO Shape ID	Parent EO Number

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Gunpowder Creek
NCDOT TIP #R-3437

Directions

Gunpowder Creek, Caldwell County. Occurrence consists of three subpopulations located approximately 1km north of the community of Hudson, to the east of US-321A, to the west of Gunpowder Creek, and north of SR-1160 (Mt. Herman Road) - all three are no farther than 0.5 mile north of SR-1160; subpopulation A is located just north of Optimist Ave; subpopulation B is located just south of Optimist Ave; subpopulation C is located just north of the Mt. Herman Road/Mulberry Street intersection in sewer easement.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Caldwell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G4	Granite Falls			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28659 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 108484

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
54240	Bassett et al. 2007	Subpopulation A	Polygon	Delimited				1:24,000 topos (di
54241	Renninger and Her	Subpopulation B	Polygon	Delimited				1:24,000 topos (di
54242	Renninger et al. 20	Subpopulation C	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Element Occurrence Report

EO ID 28659 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 108484

Surveyor

Surveyor

Tim Bassette, NCDOT
Dennis Herman, NCDOT
Neil Medlin, NCDOT
Jason Dilday, NCDOT
Jared Gray, NCDOT
Heather Renninger, NCDOT
Mary Frazer, NCDOT
Anne Burroughs, NCDOT

Survey Date 2010-04-21

Last Observation Date 2010-04-21 **First Observation Date** 2007-03-28

EO Data Subpopulation A: 317 individuals over 0.53 acres counted by Bassette, Herman, Medlin, Dilday, and Gray on 28 March 2007. Plants mostly single stem with some small clumps; buds and flowers present (Bassette 2007). Subpopulation B: 15 individuals (10 vegetative, 5 in flower) over 0.04 acres observed by Renninger and Herman on 07 April 2010. Plants small or single stems; seedlings present (Renninger 2010).
Subpopulation C: 41 individuals over 0.42 acres observed by Renninger, Frazer, and Burroughs on 21 April 2010. About 25% vegetative, 75% in flower; seedlings present (Renninger 2010).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Subpop A: Low threat of invasives; however, Lonicer japonica, Ligustrum sinense, and Microstegium present in surrounding landscape; well-used dirt path traversing some of subpopulation (2007). Subpop B: Habitat adequate; thick duff all over slope and heavily shaded (2010). Subpop C: Dense growth of Japenese honeysuckle and some privet. Saplings of tree-of-heaven present. Site highly disturbed with trash present (2010).

Condition Rating

Size of EO Subpopulation A: 317 individuals over 0.53 acres (2007).
Subpopulation B: 15 individuals over 0.04 acres (2010).
Subpopulation C: 41 individuals over 0.42 acres (2010).

Landscape Context Between two major US highways, near urban area; in corridor of proposed new road [TIP No. U-3437] (2010).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2010-04-21

EO Rank Comments 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

EO Rank Specifications Version Used

Description

EO Type

General Description Supopulation A: North-facing slope; plants mid-slope, some stream bank; moist, well drained site. Mesic Mixed Hardwood Forest (Piendmont subtype) - medim quality; Pacolet soils.Associated species: Fraxinus americana, spotted wintergreen, Polystichum acrostichoides, Asplenium platyneuron, Quercus falcata, Smilax rotundifolia, Liriodendron tulipifera, Quercus alba, Pinus strobus, Carpinus caroliniana, Ilex opaca, Cornus florida, Rhododendron maximum, Prunus serotina, cranefly orchid, Viola spp., Rubus argutus, Acer rubrum, Oxydendrum arboreum, Pinus virginiana, Tsuga canadensis (Bassette 2007). Subpopulation B: Mid-slope, dry, closed canopy. Mesic Mixed Hardwood Forest (Piendmont subtype) - disturbed, medim quality; Pacolet soils. Associate species: Quercus alba, Quercus rubra, Carya tomentosa, Fagus grandifolia, Pinus strobus, Rhododendron maximum, Ilex opaca, Lycopodium sp., Polystichum acrostichoides, Chimaphila maculata (Renninger 2010). Subpopulation C: North-facing slope in sewer easement next to unnamed tributary of Gunpowder Creek. Steep slope adjacent to stream. Pacolet soils. Associated species primarily tulip poplar with a mix of white pine, red maple, American holley, privet, poison ivy, and Japanese honeysuckle (Renninger 2010).

Element Occurrence Report

EO ID 28659 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 108484

Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Centerline of road project bisects subpopulation A; well-used dirt path traversing some of subpopulation A (Bassette 2007).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Subpopulation A within proposed road corridor of TIP No. U-3437; subpopulations B and C not within right-of-way but may be impacted - plants may be relocated if alternative is chosen (Renninger 2010).
Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary
F07DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff in 2007.	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 12/7/2015 12:00:00AM
Transcribed By Mason **Transcription Date** 7/27/2010 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By SCM **Digital Mapping Date** 7/27/2010 10:20:56AM

Element Occurrence Report

EO ID 28659 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 108484

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1830 - NCCALD
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
ACREAGE	2.740875
HECTARES	1.109197
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	38657 - 35081-G4
HUC_12	030501010803

Record Maintenance

Record Create User	SCM	**Record Create Date**	7/27/2010 10:10:00AM
Last Modified By	JTF	**Last Modified Date**	12/7/2015 11:12:43PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 28582 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 107958

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 287 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Fox Knoll Farm

Directions

Fox Knoll Farm: This property is located at 4863 Peniel Road, Tryon, NC. The driveway to the property is on the west side of SR-1525 (Peniel Road), 0.30 mile south of the SR-1525/SR-1527 (Bill Holbert Road) intersection (Torlina 2009). No data on the location of the occurrence with the property was provided with Torlina (2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Polk (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35082-B2	Landrum			
35082-C2	Mill Spring			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28582 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 107958

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

More habitat may exist along the connected stream networks on this and adjacent properties.

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
53990	2016; Tuttle	Fox Knoll Farm (Cc	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Pam Torlina, Pacolet Area Conservancy
Julie Tuttle
Jim Troppmann, landowner

Element Occurrence Report

EO ID 28582 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 107958

Survey Date 2016-08-04
Last Observation Date 2016-08-04 **First Observation Date** 2009-07-08
EO Data 2016: Several hundred clumps estimated on 4 August 2016. Plants and habitat are in excellent condition. (Tuttle 2016)
2009: Presence noted on 8 July 2009 and reported in the species list for this property, which is under easement with Pacolet Area Conservancy. (Torlina 2009, 2016).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Plants and habitat are in excellent condition

Condition Rating
Size of EO Several hundred clumps estimated in 2016.
Landscape Context Forest is recovering from previous cutting as evidenced by abundance of Liriodendron tulipifera in the canopy and average canopy tree diameter of approximately 10-12 inches, but otherwise in excellent condition with no invasive plant species noted (Tuttle 2016).

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**

EO Rank Date 2016-08-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Moist, NE-facing bluff and streamside seepy areas in Mesic Mixed Hardwood Forest. Abundance is highest on the edges of small depressions (microtopography) and on relatively flat but well-drained areas next to the small stream channel. Abundance decreases with distance from the stream channel. The species is generally absent from a patch of Piedmont Heath Bluff dominated by Kalmia latifolia that occurs along the stream between the two mapped polygons. The forest is recovering from previous cutting, as evidenced by abundance of Liriodendron tulipifera in the canopy and average canopy tree diameter of approximately 10-12 inches. Habitat quality is excellent (Tuttle 2016).
This area is characteristic of a Dry-Mesic Oak-Hickory Forest, and consists of a maturing canopy and a lush understory of trees, shrubs, and herbaceous plants. This area also contains two tributaries to White Oak Creek. The first tributary flows north/northwest through the Property for approximately 2,506 feet; an approximately four acre lake is formed by this tributary. The second tributary flows north/northwest along the northeastern property line for approximately 1,337 feet...There is an approximately 15 acre Open Field within this area that is mostly grassy area and occasionally mowed. There are several trails, maintained by the Foothills Equestrian Trails Association, that traverse this area." See Torlina (2009) for a partial species list from the property.

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** **TNC involvement**
Protection Comments The "natural area" portion of the property is under conservation easement with Pacolet Area Conservancy (Torlina 2009).

MA/Ownership

Element Occurrence Report

EO ID 28582 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 107958

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
1201	Pacolet Area Conservancy Easement		N - No	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Edward F. Cochran	as of 12/2009. Address: 4863 Peniel Road, Tryon, NC 28782. 828-894-3360.
Private individual	Jim and Ann Troppmann	2016 owners

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments No introduced or invasive species observed in the natural area (Tuttle 2016).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U09TOR01NCUS	Torlina, Pam. 2009. Fox Koll Farm - Cochroan property: Baseline documentation report for the Pacolet Area Conservancy; December 17, 2009.	N
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.	N
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/23/2016 12:00:00AM
Transcribed By	Mason	**Transcription Date**	7/9/2010 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	8/19/2016 2:25:08PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 28582 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 107958

Spatial Attributes

Attribute Name	Attribute Value
PARENT_EO_ID	67672
PARENT_EO_ID	70668
LONGITUDE_DD	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
Acreage	1.95206583331
Hectares	0.789974234965
WATERSHED	194 - 03050105
MAPSHEET	40116 - 35082-C2
MAPSHEET	40480 - 35082-B2
COUNTY	1891 - NCPOLK
HUC_12	030501050202

Record Maintenance

Record Create User	SCM	**Record Create Date**	7/9/2010 9:38:05AM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:15:33PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 28359 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106335

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 286 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated
2438	New Bethel Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: New Bethel Plant Site, Tate Conservation Easement (Sub EO of EO 247).
NCDOT TIP: R-2233 US 221 Rutherfordton Bypass
NCDOT Tate Conservation Easement Transplant Plots

Directions

Tate Conservation Easement. Plants are located within 23 plots on the Tate conservation easement; the property is located on the east side of US-221 between SR-2287 (Jaynes Road) to the north and the railroad tracks to the south (Fontaine 2009). [Note: Transplant plots (EO 286) source feature currently overlaps area of native plants (EO 106). M. Buchanan (pers. comm. with S. Mason, 10 March 2009) advised to leave mapping this way because the native population may be patchy and the polygon provided by Padgett (2007) may not account for this and encompass the entire extent of the occurrence.]

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City			
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 28359 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106335

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

[Note: Transplant plots (EO 286) source feature currently overlaps area of native plants (EO 106). M. Buchanan (pers. comm. with S. Mason, 10 March 2009) advised to leave mapping this way because the native population may be patchy and the polygon provided by Padgett (2007) may not account for this and encompass the entire extent of the occurrence.]

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
53009	2010; NCDOT TraiTate Conservation I		Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2011, 2013, 2015

Element Occurrence Report

EO ID 28359 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106335

Surveyor

Surveyor

NCDOT biologists
Heather Wallace Renniger, NCDOT
Neil Medlin, NCDOT
Tim Bassette, NCDOT
Matt Haney, NCDOT
Phil May, Carolina Ecosystems
Chris Hopper, Carolina Ecosystems
Rob Crowther, Carolina Ecosystems
Moni Bates, Alderman Environmental

Survey Date 2015-04-22

Last Observation Date 2015-04-22 **First Observation Date** 2010-01-27

EO Data 2015: 326 plants counted on 22 April (NCDOT 2015).
2013: 181 plants counted on 16 April (NCDOT 2013).
2011: 284 plants counted on 15 April (NCDOT 2011).
2010: On 27 January 2010, NCDOT biologists relocated 276 plants from eight EOs into 23 plots; EOs were not mixed in the plots [see Additional Topics for more details]. Donor EOs were: EO 076 = 4 plants; EO 106 = 93 plants; EO 113 = 7 plants; EO 114 = 14 plants; EO 172 = 9 plants; EO 174 = 35 plants; EO 175 = 114 plants (Fontaine 2010).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 2015: 326 plants

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2015-04-22

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Dry-mesic Oak Hickory; high quality; Associated species: Quercus alba, Quercus rubra, Quercus coccinea, Quercus velutina, Carya tomentosa [C. alba], Pinus echinata, Oxydendron arboretum, Euonymus americana, Cornus florida, Liriodendron tulipifera, Lonicera sempervirens, Carex sp (Renninger 20005) and Mesic Mixed Forest grading into Basic Mesic Forest, medium to high quality, Pacolet soils; Associated species: red oak, white oak, strawberry bush, carpinus, sourwood; alluvial and lower to upper slope; Micro-relief: flat, concave, convex, and drop-off; moist to dry; filtered light (Renninger 2003). [See EO 106 for documentation and details].

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

Element Occurrence Report

EO ID 28359 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106335

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		Y - Yes	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Robert and Carolyn Tate	as of 2009
State/provincial gove	NCDOT	easement owner

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "Plants from each EO were placed into circular plots. Plots were chosen by locating areas near but not including resident [plants]. EO's were not mixed within a plot. The location of each plot was GPS'ed and plot size, EO, and total number of plants in the plot was recorded. A metal stake with metal label was installed in the center of each plot. Average planting density was about 4 plants per meter. We [NCDOT] required 23 plots to accomodate all the plants. Plenty of room for additional plots at this site. Approximately 96 person-hours were spent in the transplant effort" (Fontaine 2010).

Topic Keywords

Keywords
NC DOT
TRANSPLANT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N
F15DOTNCUS	N.C. Department of Transportation. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	Mason	**Transcription Date**	3/9/2010 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JTF	**Digital Mapping Date**	3/17/2010 10:25:11AM

Element Occurrence Report

EO ID 28359 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106335

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1897 - NCRUTH
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
LONGITUDE_DMS	[redacted]
UTM_NORTHING	
LATITUDE_DD	
ACREAGE	0.186336
LONGITUDE_DD	[redacted]
HECTARES	0.075408
UTM_ZONE	[redacted]
LATITUDE_DMS	
UTM_EASTING	
MAPSHEET	40119 - 35081-C7
HUC_12	030501050502
PARENT_EO_ID	66278

Record Maintenance

Record Create User	SCM	**Record Create Date**	3/9/2010 10:07:25AM
Last Modified By	JTF	**Last Modified Date**	7/15/2016 6:13:42PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 28353 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106242

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 284 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: McGalliard Creek, Lovelady 16 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions

Catawba River: McGalliard Creek, Lovelady 16 (Sub EO of EO 178). Located in woodlands about 200-400 feet south of Murphy Lane and 700-900 feet west of Laurel Street (Bassette 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28353 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106242

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

Sub EO281 is located 0.7km to the east; sub EO283 is located 0.3km to the south ; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See msp for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52947	2008; NCDOT	Lovelady site 16	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
NCDOT biologists

Element Occurrence Report

EO ID 28353 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106242

Survey Date 2009-04-07
Last Observation Date 2009-04-07 **First Observation Date** 2008-10-21
EO Data 2009: NCDOT biologists confirmed the identity of the plants as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants on 21 October 2008; presence noted, no count made (Bassette 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2009-04-07
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments This site was located outside of the R-2824 right-of-way and outside of the project study corridor, so its boundaries were not recorded with GPS nor were formal plant counts made (Bassette 2009).

Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 28353 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106242

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/15/2015 12:00:00AM

Transcribed By Mason **Transcription Date** 3/5/2010 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 10/15/2015 10:12:37AM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Acreage	3.46473966239
HUC_12	030501010801
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Hectares	1.40213256
WATERSHED	190 - 03050101
MAPSHEET	38656 - 35081-G5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User SCM **Record Create Date** 3/5/2010 12:35:38PM

Last Modified By JTF **Last Modified Date** 12/11/2015 11:11:29PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 28352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106240

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 283 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: McGalliard Creek, Lovelady 14 and 15 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions

Catawba River: McGalliard Creek, Lovelady 14 and 15 (Sub EO of EO 178). Lovelady 14: Located in the woods between Forest Drive and Laurel Street, about 250 feet west of Laurel Street (Bassette 2009). Lovelady 15: Located between Falls Road and Laurel street in woods about 200 feet south of Meytre Avenue, about 800 feet northwest of the end of Villar Lane (Bassette 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106240

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

Sub EO282 is located 0.1km to the east; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52945	2008; NCDOT	McGalliard Creek, l	Polygon	Delimited				1:24,000 topos (di
52946	2008; NCDOT	McGalliard Creek, l	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
NCDOT biologists

Element Occurrence Report

EO ID 28352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106240

Survey Date 2009-04-07
Last Observation Date 2009-04-07 **First Observation Date** 2008-10-21
EO Data 2009: NCDOT biologists confirmed the identity of the plants at both sites as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants at both sites on 21 October 2008; presence noted, no count made (Bassette 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2009-04-07
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments These sites were located outside of the R-2824 right-of-way and outside of the project study corridor, so their boundaries were not recorded with GPS nor were formal counts made (Bassette 2009).

Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 28352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106240

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/15/2015 12:00:00AM

Transcribed By Mason **Transcription Date** 3/5/2010 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 10/15/2015 10:14:20AM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement **Y Coordinate** Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010801
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	14.5588059462
Hectares	5.89174882995
WATERSHED	190 - 03050101
MAPSHEET	38656 - 35081-G5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User SCM **Record Create Date** 3/5/2010 12:31:05PM

Last Modified By JTF **Last Modified Date** 10/15/2015 11:19:26PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 28351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106237

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 282 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Hoyle Crk-Micol Crk, Lovelady 10 and 11 (Sub EO of EO 178). NCDOT TIP: R-2824

Directions

Catawba River: Hoyle Crk-Micol Crk, Lovelady 10 and 11. (Sub EO of EO 178). Present in the woods at he southeast quadrant of Lovelady Road/Laurel Street intersection: Lovelady 10 - about 1,100 feet south of Lovelady Road and 850 feet west of Hoyle Creek; Lovelady 11 - Main segment of site is about 300 feet south of Lovelady Road; one fork of site found between Owens Avenue and Barus Avenue; second fork located between Arus Avenue and Ponswood Avenue (Bassette 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106237

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

Sub EO281 is located 0.2km to the north; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town)greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See map for details.

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52944	2008; NCDOT	Hoyle Crk-Micol C	Polygon	Delimited				1:24,000 topos (di
52943	2008; NCDOT	Hoyle Crk-Micol C	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Survevor
NCDOT biologists

Element Occurrence Report

EO ID 28351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106237

Survey Date 2009-04-07
Last Observation Date 2009-04-07 **First Observation Date** 2008-10-21
EO Data 2009: NCDOT biologists confirmed the identity of the plants at both sites as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants at both sites on 21 October 2008; presence noted, no count made (Bassette 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2009-04-07
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments These sites are located outside of the R-2824 right-of-way and outside of the project study corridor, so their boundaries were not recorded with GPS nor were formal counts made (Bassette 2009).

Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 28351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106237

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/15/2015 12:00:00AM

Transcribed By Mason **Transcription Date** 3/5/2010 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By SCM **Digital Mapping Date** 3/5/2010 12:23:44PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	30.38844
HECTARES	12.297814
LATITUDE_DD	Not processed per agreement with Plaintiff
LATITUDE_DMS	Not processed per agreement with Plaintiff
LONGITUDE_DD	Not processed per agreement with Plaintiff
LONGITUDE_DMS	Not processed per agreement with Plaintiff
MAPSHEET	38656 - 35081-G5
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	190 - 03050101
HUC_12	030501010801
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User SCM **Record Create Date** 3/5/2010 12:23:46PM

Last Modified By JTF **Last Modified Date** 10/15/2015 11:19:26PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 28350 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106231

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 281 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Hoyle Crk-Micol Crk, Lovelady 12 and 13 (Sub EO of EO 178).
NCDOT TIP: R-2824

Directions

Catawba River: Hoyle Crk-Micol Crk, Lovelady 12 and 13 (Sub EO of EO 178). Present at two areas on the north side of SR-1546 (Lovelady Road), just east of Crescent Street in the woods behind [north of] a large industrial facility: Lovelady 12 - about 900 feet west of Hoyle Creek; Lovelady 13 - about 1,500 feet west of Hoyle Creek (Bassette 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28350 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106231

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Sub EO282 is located 0.2 km to the south; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52941	2008: NCDOT	Hoyle Crk-Micol Cr	Polygon	Delimited				1:24,000 topos (di
52942	2008; NCDOT	Hoyle Crk-Micol C	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
NCDOT biologists

Element Occurrence Report

EO ID 28350 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106231

Survey Date 2009-04-07
Last Observation Date 2009-04-07 **First Observation Date** 2008-10-21
EO Data 2009: NCDOT biologists confirmed the identity of the plants at both sites as H. naniflora on 07 April 2009; presence noted, no count made.
2008: NCDOT biologists first observed plants at both sites on 21 October 2008; presence noted, no count made (Bassette 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2009-04-07
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments These sites are located outside of the R-2824 right-of-way and outside of the project study corridor, so their boundaries were not recorded with GPS nor were formal counts made (Bassette 2009).

Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 28350 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106231

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/15/2015 12:00:00AM

Transcribed By Mason **Transcription Date** 3/5/2010 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By SCM **Digital Mapping Date** 3/5/2010 12:15:37PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	2.712587
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	38656 - 35081-G5
WATERSHED	190 - 03050101
ACREAGE	6.702922
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HUC_12	030501010801
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User SCM **Record Create Date** 3/5/2010 12:04:39PM

Last Modified By JTF **Last Modified Date** 10/15/2015 11:19:25PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 28343 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106198

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 280 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Hoyle Creek, Lovelady 9 (Sub EO of EO 178)
NCDOT TIP: R-2824

Directions

Catawba River: Hoyle Creek, Lovelady 9 (Sub EO of EO 178). Site is on the south side of SR-1546 (Lovelady Road), approximately 1,000 feet east of Hoyle Creek (Bassette 2009).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28343 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106198

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Sub EO 161 is located 0.03 km to the southeast; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO178 is approximately 1.5 air kilometers from EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore separate records (Wichmann and Franklin 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52922	2009; NCDOT	Hoyle Creek, Lovel	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
NCDOT staff

Element Occurrence Report

EO ID 28343 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106198

Survey Date 2009-04-07
Last Observation Date 2009-04-07 **First Observation Date** 2008-06-12
EO Data 2009: Site visted by Herman and Renninger on 07 April 2009; plants present and flowering, no count made (Bassette 2009).
2008: 126 plants in 0.16 acre counted by NCDOT staff on 12 June, 11 July, and 05 August 2008. Surveys were performed outside of the optimal survey window (Bassette 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2009-04-07
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Roadside embankment, telephone utility line easement, and inside adjacent tree line. Maintained/disturbed and Mesic Mixed Hardwood Forest community types (Bassette 2009).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**
Protection Comments Protection of NCDOT ROW is occurring through fee simple acquision; this is currently in progress as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Dennis Herman (NCDOT) and Heather Renninger (NCDOT) visted this site on 07 April 2009 to confirm the identity of the Hexastylis individuals. Flower morphology was examined in over 50 randomly selected plants and all were consistent H. naniflora characteristics. No evidence of other Hexastylis species was found at this site (Bassette 2009).

Element Occurrence Report

EO ID 28343 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106198

Additonal Topics Project let date is 15 June 2010. NCDOT is working to secure a conservation easement on the portion of this site that remains intact after the construction; as of 20 January 2010, the easement had not been secured. If the easement cannot be secured, NCDOT biologists will remove the 67 plants and hold them until it can or hold until another suitable site is acquired (Bassette 2010). NCDOT project construction (R-2824) will incur adverse effects (direct and indirect impacts) to 0.1275 acre of the 0.16 acre population, cause an anticipated loss of 73 of 126 plants. Prior to construction, NCDOT biologists will remove the 67 plants that will be directly impacted to areas within the same site that will not be impacted [the easement area]. Monitoring will take place every two years of a six year period after construction activities area completed (Bassette 2009).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G10DOT01NCUS	Bassette, Tim. 2010. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2428. [Biological Opinion is included in the materials].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	3/4/2010 12:00:00AM
Transcribed By	Mason	**Transcription Date**	3/4/2010 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	3/4/2010 2:09:03PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 28343 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 106198

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010801
HECTARES	0.426727
LATITUDE_DD	[redacted]
LATITUDE_DMS	[redacted]
LONGITUDE_DD	[redacted]
LONGITUDE_DMS	[redacted]
MAPSHEET	38656 - 35081-G5
UTM_EASTING	[redacted]
UTM_NORTHING	[redacted]
UTM_ZONE	[redacted]
WATERSHED	190 - 03050101
ACREAGE	1.054461
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	SCM	**Record Create Date**	3/4/2010 2:09:07PM
Last Modified By	JTF	**Last Modified Date**	10/15/2015 11:19:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 28199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 105005

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 279 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Northeast Lincolnton: Unnamed tributary of Walker Branch

Directions

Northeast Lincolnton: Unnamed tributary of Walker Branch. Occurrence located along the unnamed tributary of Walker Branch near where the tributary crosses the north-south transmission line located between SR-1286 (N. Newbold Street) and SR-1287 (N. Roper Drive), north of NC-27 (Luckenbaugh 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 28199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 105005

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52303	2009-04-20; LuckeUnnamed tributary (		Point	Estimated	25.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Catherine Luckenbaugh, S&ME

Survey Date 2009-04-20

Last Observation Date 2009-04-20 **First Observation Date** 2009-04-20

EO Data A "small" population observed by Luckenbaugh on 20 April 2009. No other Hexastylis species were observed downstream from the population to Walker Branch; upstream area not surveyed (Luckenbaugh 2009).

Element Occurrence Report

EO ID 28199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 105005

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank D? - Possibly poor estimated viability **EO Origin Subrank**

EO Rank Date 2009-04-20
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F09CON01NCUS	2009. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N

Element Occurrence Report

EO ID 28199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 105005

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	12/7/2015 12:00:00AM
Transcribed By	Mason	**Transcription Date**	12/15/2009 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	12/15/2009 9:01:58AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1871 - NCLINC
WATERSHED	191 - 03050102
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
HECTARES	0.195354
LONGITUDE_DD	Not processed per agreement with Plaintiff/Re
ACREAGE	0.482729
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39756 - 35081-D2
HUC_12	030501020303

Record Maintenance

Record Create User	SCM	**Record Create Date**	12/15/2009 8:58:00AM
Last Modified By	LGR	**Last Modified Date**	12/7/2015 3:04:17PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 27427 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 99192

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 278 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
West Fork Brushy Creek

Directions

West Fork Brushy Creek: Northeast of the town of New House, along the south side of West Fork Brushy Creek, about halfway between SR-1359 (Jenkins Road) and SR-1361 (West Stage Coach Trail).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D6	Polkville			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 27427 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 99192

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49126	1980; Gaddy	West Fork Brushy (	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1980

Surveyor

Survevor
L. L. Gaddy

Survey Date 1980

Last Observation Date 1980 **First Observation Date** 1980

EO Data One clump observed in a square meter by Gaddy in 1980 (Gaddy 1980).

Element Occurrence Report

EO ID 27427 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 99192

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Selective cutting in past 25 yrs (Gaddy 1980).

Condition Rating
Size of EO 1 clump (1980).
Landscape Context

EO Rank H - Historical **EO Origin Subrank**

EO Rank Date 1980
EO Rank Comments Changed from D (1980) ranked to Historical.

EO Rank Specifications Version Used

Description

EO Type
General Description Low, north facing bluff (Gaddy 1980).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 27427 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 99192

References

Reference Code	Full Citation	EO Reference Primary
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/25/2015 12:00:00AM
Transcribed By	Mason	**Transcription Date**	4/28/2009 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/28/2009 10:35:18AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Req
LATITUDE_DMS	Not processed per agreement with Plaintiff/Req
UTM_ZONE	Not processed per agreement with Plaintiff/Req
HECTARES	0.803071
LONGITUDE_DD	Not processed per agreement with Plain
ACREAGE	1.984424
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
MAPSHEET	39752 - 35081-D6
HUC_12	030501050701
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	SCM	**Record Create Date**	4/28/2009 10:25:47AM
Last Modified By	LGR	**Last Modified Date**	11/25/2015 1:05:47PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 27352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 98886

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 277 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Hickory: Martin Marietta Quarry

Directions

Hickory: Martin Marietta Quarry. The property is located on the north side of SR-1465 (11 Avenue SE) just east of Hickory; two subpopulations are located in the ravine located near the middle of the property: East subpopulation is located just east of the powerline corridor and downslope of the Temporary Access Road, near Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester; West subpopulation is located on the west side of the powerline corridor, immedately downslope of where the Access Road comes off the corridor, near Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester (Matthews 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 27352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 98886

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Occurrence is separated from the next closest occurrence by an interstate highway and is greater than 2km from other conspecific occurrences.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
48978	2009; Matthews	East subpopulation	Point	Estimated	25.00	Meters		1:24,000 topos (di
48979	2009; Matthews	West subpopulation	Point	Estimated	25.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

James Matthews, HARP
Lisa Gaffney, HARP
David Campbell, HARP

Element Occurrence Report

EO ID 27352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 98886

Survey Date 2011-11-04
Last Observation Date 2011-11-04 **First Observation Date** 2009-04-03
EO Data 132 plants dug by HARP [from the west occurrence] on 04 November 2011 and relocated to EO 294 (Bud Geitner Park); relocation occurred to permit expansion at the quarry [see 'Additonal Topics']; Matthews reported that, as far as any plants remaining at this location, "I am satisfied we got what was there"; if the quarry is developed, any remaining plants will be extirpated (HARP 2011, Matthews 2012). Total of 82 plants observed at two locations by Matthews and Gaffney on 03 April 2009: East subpopulation - 18 plants in an area of 50x40 feet; West subpopulation - 64 plants in flower over 100 square feet (Matthews 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 132 plants dug from the west occurrence and relocated (2011). Total of 82 plants in 2 locations (2009).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2011-11-04
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Mixed oak-hickory forest on north-facing slopes of a ravine (Matthews 2009).
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 27352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 98886

Additonal Topics Relocation of plants from this occurrence occurred to permit expansion at the quary. At the request of Martin Marietta, negotiations were held with USFWS regarding the potential for transplanting the population. This action was approved verbally by USFWS on 23 May 2011 (HARP 2011). "The proposed location of CMP #1 and Basins #7 and #8 can impact [the west subpopulation] of plants...There is no proposed developmental impact for [the east subpopulation] of plants" (Matthews 2009).

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F09CON01NCUS	2009. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F12CON01NCUS	2012. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N

Specimen

Specimen Description
HERB.UNCC, J.F. Matthews & L.R. Gaffney, 03 April 2009.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	4/2/2012 12:00:00AM
Transcribed By	Mason	**Transcription Date**	4/15/2009 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/15/2009 2:19:35PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 27352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 98886

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1834 - NCCATA
WATERSHED	191 - 03050102
UTM_EASTING	[redacted]
LATITUDE_DMS	[redacted]
UTM_ZONE	[redacted]
HECTARES	0.377123
LONGITUDE_DD	[redacted]
ACREAGE	0.931889
LATITUDE_DD	[redacted]
UTM_NORTHING	[redacted]
LONGITUDE_DMS	[redacted]
MAPSHEET	39024 - 35081-F3
HUC_12	030501020302

Record Maintenance

Record Create User	SCM	**Record Create Date**	4/15/2009 1:37:54PM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 4:30:07PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 26982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 97254

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 276 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Cliffside Steam Station
USFWS Flex Fund Monitoring Site 7
South Shore Cliffside Steam Station Ash Basin Transplant

Directions

Cliffside Steam Station. Scattered on the Steam Station Property. There are two areas where impacts from various projects occur: 1) East of Suck Creek: Adjacent to the ash pond, on its east and southeast sides. Plants also found elsewhere on the property [data was not reported, only that plants are present] (USFWS 2008). 2) McCombs Road: In the area west of McCombs road and between the transmission lines that cross the McCombs Road 0.25 road mile and 0.55 road mile south of Matheny Road (SR-1190); also on the south bank of the Broad River, just east of the transmission line (USFWS 2009).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 26982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 97254

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68189	Padgett 2012	Cliffside Steam Stat	Polygon	Delimited				GPS, 10-meter acc
68190	Padgett EO 276 plo	Cliffside Steam Stat	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type
Quantitative ground survey

EO Survey Note
2007, 2008, 2009, 2011, 2012, 2013

Element Occurrence Report

EO ID 26982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 97254

Surveyor

Surveyor

J. Robert Siler, Envir. Resources of the Carolinas
James Padgett, NCNHP
Kimberly Israel, NCNHP

Survey Date 2016-06-20

Last Observation Date 2016-06-20 **First Observation Date** 2007-08-10-Pre

EO Data <u>2016:</u> Bloom counted 2,458 plants on June 9 and 20, 2016 in 1.9 acres of monitoring plots (the southern-most plot was not counted in 2016). Estimated 39,535 total plants covering the entire 30.5 acre population (Bloom 2016).
<u>2015</u>: Padgett counted 2943 plants on 27 May 2015 in 2.86 acres of monitoring plots. Estimated 33,559 total plants covering the entire 30.56 acres (Padgett 2015).
<u>2014 </u>: 2866 plants observed in permanent monitoring plots by Padgett on 6 and 11 June 2014, estimated 32681 total plants covering 30.56 acres (Padgett 2014).
<u>2013:</u> 2909 plants observed in permanent monitoring plots by Padgett and Israel on 8 May 2013, estimated 33,171 total plants covering 30.56 acres (Padgett 2013).
<u>2012</u>: Padgett counted 2287 plants in permenant monitoring plots. Total population estimate is 26000+ plants (Padgett 2012).
<u>Pre 2012</u>: Based on surveys conducted between 2005-2008, Siler estimates that there are at least 5,500 plants spread throughout the property. This number includes those east of Suck Creek, in the ash pond project area (Siler 2009).
McCombs Road/Broad River:
<u>2009: </u>USFWS and Environmental Resources observed 3,150+ plants in this action area in 2009: 3000+ in the area west of the proposed switching station on the west side of McCombs Road and about 150 plants east of the transmission line corridor on the Broad River. Four plants near the switching station site will be impacted by its construction; these are to be relocated to a site elsewhere within the population (USFWS 2009).
East of Suck Creek:
<u>2011: </u>65 plants total (plot A=15 plants; C=18 plants; D=27 plants; F=5 plants) observed by Siler in the four circular plots on 28 September 2011. Comparing October 2010 numbers to September 2011 numbers, the data indicates 115% survival in plot A; 86% survival in plot B; 73% in plot C; and 71% in plot F (Siler 2011).
2010: 78 plants total (plot A=13 plants; C=21 plants; D=37 plants; F=7 plants) observed by Siler in the four circular plots on 01 October 2010. Comparing October 2009 numbers to October 2010 numbers, the data indicates 62% survival in plot A; 110% survival in plot B; 69% in plot C; and 100% in plot F (Siler 2010).
<u>2009</u>:On 04 April 2009, four 3 sqm circular plots were established by Environmental Resources staff in order to monitor the relocated plants. A total of 101 plants (plot A=21 plants; C=19 plants; D=54 plants; F=7 plants) were observed by Siler in the plots on 07 October 2009; a total of 79 plants (plot A=18 plants; C=19 plants; D=30 plants; F=12 plants) were observed by Siler in the plots on 04 April 2009 (Siler 2009).
<u>2008: </u>On 06 June 2008, Siler observed 136 plants from those moved in September 2007 survived - 81% survival with some resprouting from previously reported dead plants. On 04 June 2008, Siler observed 772 plants of the 908 plants moved in December 2007 survived - 90% survival; many plants flowering (Siler 2011). Environmental Resources staff observed in the spring of 2008 that 189 of the transplants did not survive. Therefore, the total number of plants now protected in the "action area" was estimated to be 1,111 (USFWS 2008).
<u>2007</u>: Siler observed on 03 November 2007 that 121 of the 168 plants moved in September 2007 survived - 72% survival (Siler 2011). 1,097 plants were relocated to 5+ feet upslope from the historic full-pool elevation: 168 plants on 06 & 07 September 2007, 21 plants on 03 November 2007, and 908 plants on 03 & 07 December 2007 (USFWS 2008). Approximately 1,300 plants were observed in the "action area" by Environmental Resources staff sometime before 10 August 2007 (USFWS 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Evidence of herbivory by voles (Siler 2011). Wooded area adjacent to coal-fired powerplant ash basin.

Condition Rating

Size of EO

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

Element Occurrence Report

EO ID 26982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 97254

EO Rank Date 2016-06-20
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Wooded area adjacent to coal-fired powerplant ash basin (USFWS 2008).

Min. Elevation		**feet**		**meters**
Max. Elevation		**feet**		**meters**
Observed Area	10.22	**acres**	4.14	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments Duke Energy proposed posting signs in the area where the plants were relocated. However, this is not permanent protection because Duke Energy is conducting extensive planning for the installation of scrubbers, expansion of generation, and retirement of older units; therefore, Duke Energy requires the option of using the land where the plants are located for these purposes (USFWS 2008).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Duke Energy	2012, 2015, 2016 permission granted

Owner Comments Duke Energy contact is Steve Hodges and James Padgett spoke with him on 2016-03-17.
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Plants were impacted by the raising of the ash pond water levels. The plants were not discovered until after temporary innundation but most did not survive this event. Additionally, about 17% of the plants did not survive the relocation, which done to avoid innundating them. The population may still be impacted by expansion activities at this facility (2008).

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 26982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 97254

References

Reference Code	Full Citation	EO Reference Primary
N08FWS01NCUS	U.S. Fish and Wildlife Service. 2008. Biological Opinion: 2007 Emergency Consultation on Cliffside Steam Station Hexastylis naniflora. Log Number 4-2-07-155.	N
F09CON01NCUS	2009. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
U09SIL01NCUS	Siler, J. Robert. 2009. Management recommendations for Dwarf-flowered Heartleaf, a federally protected species, on Cliffside Steam Station property [monitoring data also attached to this document].	N
U11SIL01NCUS	Siler, J. Robert. 2011. Monitoring data for Dwarf-flowered Heartleaf, a federally protected species, on Cliffside Steam Station property.	N
N09FWS01NCUS	U.S. Fish and Wildlife Service. 2009. Biological Opinion on the proposed construction of Duke Energy's Cliffside Switching Station and 500-kV transmission line in Cleveland County, North Carolina. Log number 4-2-08-290.	N
U10SIL01NCUS	Siler, J. Robert. 2010. Monitoring data for Dwarf-flowered Heartleaf, a federally protected species, on Cliffside Steam Station property.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.	N
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	Mason	**Transcription Date**	1/29/2009 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JEP	**Digital Mapping Date**	10/15/2014 10:22:04AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 26982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 97254

Spatial Attributes

Attribute Name	Attribute Value
UTM_ZONE	17
Acreage	30.5563390686
Hectares	12.36573079
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
MAPSHEET	40484 - 35081-B6
HUC_12	030501050503
LONGITUDE_DD	Not processed per agreement with Plaintiff/B
LATITUDE_DD	Not processed per agreement with Plaintiff/B
LONGITUDE_DMS	Not processed per agreement with Plaintiff/B
LATITUDE_DMS	Not processed per agreement with Plaintiff/B
UTM_EASTING	Not processed per agreement with Plaintiff/B
UTM_NORTHING	Not processed per agreement with Plaintiff/B
HUC_12	030501050407
HUC_12	030501050506
COUNTY	1839 - NCCLEV
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	SCM	**Record Create Date**	1/29/2009 2:46:38PM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:13:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 26004 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 91541

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 275 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Shoals Creek
NCDOT TIP: B-2146 SR 1333 Eufola Road over Buffalo Shoals Creek

Directions

Iredell County, Buffalo Shoals Creek. "Southwest quadrant of Bridge N0. 86 on SR 1333 (Eufola Road) over Buffalo Shoals Creek. Site located approximately 7.0 miles southwest of Statesville, NC and approximately 1.0 mile east -southeast of the intersection of SR 1333 (Eufola Road) and US Route 70. Site located in natural resouce project [NC DOT] study of TIP No. B-2146" (Bassette 2007).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Iredell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F1	Catawba			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 26004 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 91541

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
45094	Bassett, 2007	Buffalo Shoals Cree	Polygon	Delimited				1:24,000 topos (di
90108	2014; NCDOT	Buffalo Shoals Cree	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2007, 2010, 2014

Element Occurrence Report

EO ID 26004 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 91541

Surveyor

Surveyor

Tim Bassette, NC Dept. of Transportation
James Padgett, NCNHP
Heather Renninger, NCDOT
Melissa Miller, NCDOT
Dennis Herman, NCDOT
Mike Sanderson, NCDOT

Survey Date 2014-05-21

Last Observation Date 2014-05-21 **First Observation Date** 2007-04-17

EO Data 2014: 257 plants counted by NCDOT biologist on 21 May 2014 (NCDOT 2014).
2010: 230 vegetative individuals observed by NCDOT biologists on 09 November 2010 (Renninger 2010).
2007: 192 individual clumps, with 50% estimated of these flowering; observed on 11 July 2007 by NCDOT biologists; entire polulations surveyed, actual plant count was conducted on foot using field transects throughout the entire population which is 0.35 acre in size (Bassette 2007).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments NCDOT is monitoring this population as part of a commitment to USFWS (Renninger 2010).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Small amounts of Japanese honeysuckle (Lonicera japonica) growing along periphery of population. Small amount of Japanese grass (Microstegium vimineum), sericea lespedeza (Lespedeza cuneata), and mimosa (Albizia julibrissin) observed within the NCDOT right-of-way but outside the limits of the H. naniflora population (Renninger 2010).
Healthy looking plants, including numberous large clumps of leaves (Bassette 2008).

Condition Rating

Size of EO 230 individuals (2010). At least 192 individual clumps (2008).

Landscape Context More than 1 acre of suitable habitat on the southwest quadrant, and more than 0.1 acre in the southeast quadrant (Renninger 2010).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2014-05-21

EO Rank Comments EO rank based on EO Rank Specs for this species (Wichmann 2008).

EO Rank Specifications Version Used

Description

EO Type

General Description Majority of site occurs in a Piedmont/Coastal Plain Heath Bluff (high quality); some of the site occurs in a Mesic Mixed Hardwood Forest (Piedmont subtype) (high quality). Soils on most of the site are mapped as LuF (Louisburg and Louisa soils, 25-55% slopes); very southern and eastern fringes are mapped as CsE2 (Cecil soils, 15-25% slopes, eroded). Associated species: Fagus grandifolia, Quercus alba, Quercus rubra, Quercus falcate, Liquidambar styraciflua, Acer rubrum,
Oxydendrum arboretum, Carpinus caroliniana, Cornus florida, Hammamelis virginiana, Kalmia latifolia, Halesia Carolina, Leucothoe fontanesiana, Viburnum acerifolium, Smilax spp., Vaccinium vacillans, Vitis rotundifolia, Hexastylis arifolia, Polystichum acrostichoides, Tipularia discolor, Asplenium platyneuron (Renninger 2010).
High quality Piedmont/Coastal Plain Heath Bluff and high quality Mesic Mixed Hardwood Forest (Piedmont subtype). Associated NC watch list species include: Trillium catesbaei and Nestronia umbellula. Population extends from top of stream bank to near crest with most individuals occuring on the midslope. Moisture regime is well-drained, moist, to mesic. Canopy cover is approximately 50% with a prevalence of understory trees and shrubs (Bassette 2007).

Min. Elevation	700.00	**feet**	213.36	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	0.35	**acres**	0.14	**hectares**

Protection

Element Occurrence Report

EO ID 26004 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 91541

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Jimmy Lee Shaver	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Invasive species pose a low threat overall, a small amount of Microstegium vimineum and Lespedeza cuneata are located outside the population but along nearby roadside. Albizia julibrissin occur along the edges of the site [population?] (Bassette 2007).

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F07CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	5/2/2008 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 2:21:06PM

Element Occurrence Report

EO ID 26004 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 91541

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501011103
LONGITUDE_DD	Not processed per agreement with Plaintiff/Be
LATITUDE_DD	Not processed per agreement with Plaintiff/Be
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Be
LATITUDE_DMS	Not processed per agreement with Plaintiff/Be
UTM_EASTING	Not processed per agreement with Plaintiff/Be
UTM_NORTHING	Not processed per agreement with Plaintiff/Be
UTM_ZONE	Not processed per agreement with Plaintiff/Be
Acreage	0.443035184637
Hectares	0.179290255008
WATERSHED	190 - 03050101
MAPSHEET	39026 - 35081-F1
COUNTY	1865 - NCIRED

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2008 2:27:24PM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:14:13PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 25900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 90335

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 274 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River/Sandy Run Natural Areas

Directions

Broad River/Sandy Run Natural Areas: Broad River Greenway; Located 2 air miles south of Boiling Springs, NC and east NC Highway 150 on the north side of the Broad River approximately .70 mile downstream.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 25900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 90335

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
44463	2008-03-17, Padget	Broad River/Sandy	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2008

Surveyor

Surveyor

James Padgett, NCNHP
Matt Jones, Garner-Webb Univ. undergrad
Jackie Wagner, ASU

Element Occurrence Report

EO ID 25900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 90335

Survey Date 2012-03-03
Last Observation Date 2012-03-03 **First Observation Date** 2008-03-17
EO Data Wagner et. al. counted 100 plants on 3 March 2012; there were a lot of buds but no plants in full bloom; many small H. naniflora plants (1-3 leaves) and few larger plants (Wagner 2012). Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009). Several hundred plants (may be upwards of 750-1000 plants) along stream corridors of unnamed stream and adjacent north-facing slopes. In flower and bud on 17 March 2008 (Padgett 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Good to very good condition. Some past logging, and one access road.

Condition Rating
Size of EO Very large.
Landscape Context Very good along stream corridor, poor to the north where there is a cutover.

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-03-24
EO Rank Comments The rank may be lowered or raised once the plants have been censused. 2012 data not counted towards EO rank because entire population may not have been censused (Robinson 2015).
EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak-Hickory Forest and Mesic Mixed Hardwoods. Canopy species are Quercus alba, Q. coccinea, Q. falcata, Carya glabra, C. alba, Liriodendron tulipifera, and Fagus grandifolia. The understory consists of Acer rubrum, Cornus florida, Oxydendrum, and Ilex opaca. Shrubs are common and thick in palces with Kalmia latifolia and Rhododendron maximum present. Other shrubs include Vaccinium spp., and Euoynmus maericanus. Vines are present as Smilax spp., and Begnonia caprolata. Herbs include Hexastylis naniflora, Chimaphilia maculata, Galax urecolata, Hepatica maculata, and Mitchella repens.

Min. Elevation	640.00	**feet**	195.07	**meters**
Max. Elevation	710.00	**feet**	216.41	**meters**
Observed Area	7.30	**acres**	2.95	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments This occurence is afforded some protection as part of the Broad River Greenway.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
889	Broad River Greenway		Y - Yes	N

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Broad River Greenway -town of Boiling Springs	

Owner Comments

Element Occurrence Report

EO ID 25900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 90335

OwnerInfo_BCD N

Additional Topics

General Comments NCPCP issued permit ID #139 to Matthew Jones (Garner-Webb University) to allow for activities proposed in his pollination study proposal including covering flowers and collecting flowers and seeds from this occurrence. Permit expires 31 December 2009 [permit attached to EO 100] (NCPCP 2009).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.	N
G09PCP01NCUS	N.C. Plant Conservation Program. 2009. Protected Plant Conservation Permit and Record, issued in 2009.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 10/1/2015 12:00:00AM

Transcribed By JEP **Transcription Date** 3/24/2008 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By MFB **Digital Mapping Date** 3/20/2008 3:20:17PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 25900 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 90335

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050506
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	7.30722698364
Hectares	2.95713440992
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	MFB	**Record Create Date**	3/20/2008 3:20:19PM
Last Modified By	LGR	**Last Modified Date**	10/1/2015 4:40:42PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 25718 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 84915

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 273 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 37215 **Parent EO Shape ID** 172,758.00 **Parent EO Number** 316

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Northern Catawba County - Catawba River: Unnanmed tributary to Falling Creek (Sub EO of EO 316)

Directions

Catawba River: Unnanmed tributary to Falling Creek: Unnamed tributary to Falling Creek, north of Hickory, Catawba County. On the property owner, Mr. Raymond von Drehle. Four patches occur on the south side of the UT on the north-facing slopes and the other two patches are on the north side of the UT in a small forested area adjacent to maintained lawn (Cole 2007).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 25718 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 84915

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

This is EOR is based on the US Fish and Wildlife's Service's Biological Opinion (BA) document dated June 15, 2007 by Brian P. Cole [G07COL03NCUS] (Wichmann 2007).

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
39888	Raymond van Dreh		Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2007

Surveyor

Surveyor

Survey Date 2006-09

Last Observation Date 2006-09 **First Observation Date** 2006-09

Element Occurrence Report

EO ID 25718 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 84915

EO Data 2006: 530 plants total found in six discrete patches on the property by E'nV biologists in September 2006; the Biological Assessment concluded the the impoundment would impact 130 plants (24% of the plants on the property) by construction of the pond and subsequent inundation; about 362 plants in 2.1 acres are expected to remain after the project is completed; a portion of the plants at the four patches on the south side of the tributary will be impacted by the project and none of the plants at the two patches on the north side will be impacted (Cole 2007).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2006-09
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments The property owner proposed to preserve the remaining dwarf-flowered heartleafby placing a deed restriction on the site. The deed restriction will result in the preservation of 2.1 acres of dwarf-flowered heartleafhabitat and will protect about 362 individual dwarf-flowered heartleaf plants (Cole 2007).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 25718 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 84915

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G07COL03NCUS	Cole, Brian. 2007. Biological Opinion for the construction of a 1 acre pond on an unmapped tributary to Falling Creek, north of Hickory, Catawba County and its effects on the federally threatened Dwarf-flowered heartleaf (Hexastylis naniflora). US Fish and Wildlife Service, Asheville Field Office, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	11/2/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	1/23/2008 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	11/2/2015 4:17:50PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010904
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	10.4987309349
Hectares	4.24869222999
WATERSHED	190 - 03050101
MAPSHEET	38658 - 35081-G3
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 25718 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 84915

Record Create User	BLW	**Record Create Date**	1/23/2008 10:48:43AM
Last Modified By	SCM	**Last Modified Date**	5/16/2017 12:23:50PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 79554

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 272 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
No Business Creek, Boyd Tract

Directions

Located in northwestern Cleveland County, along tributaries to No Business Creek, 0.2 mi east of SR 1529 (Mt. Zion Church Road) and 0.2 mi north of SR1531 (Susan Road).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D6	Polkville			
35081-E6	Benn Knob			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 79554

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Additional surveys may located additional occurences in the area.

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
36966	2007-04-20; Padget	Drainages that flow	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2007

Surveyor

Surveyor
James Padgett, NCNHP
Andrew Kota, FCNC

Survey Date 2007-04-20

Last Observation Date 2007-04-20 **First Observation Date** 2007-04-20

Element Occurrence Report

EO ID 24982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 79554

EO Data Padgett and Kota estimated 75-150 plants occuring along several small tributaries that flow west into No Business Creek on 20 April 2007 (Padgett 2007).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank BC - Good or fair estimated viability **EO Origin Subrank**

EO Rank Date 2007-04-20
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Located in an area of maturing Dry-Mesic Oak-Hickory Forest surrounded by disturbed ares of development and sucessional old field pine stands. Dominant canopy species are Quercus alba, Q. rubra, Q. coccinea, and Liriodendron tulipifera. Understory species present include Oxydendrum arboreum, Cornus florida, Acer rubrum, Pinus spp., and Amelanchier arborea. Shrubs include scattered Kalmia latifolia and Eouymnous americanus. Herbs were failry diverse with the more common ones being Goodyera pubescens, Danthonia sp., Polysticum acrostichoides, Chimaphilia maculata, Mitchella repens, Solidago sp, and Hexastylis arifolia.

Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area 3.26 **acres** 1.32 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Boyd	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 24982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 79554

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	JEP	**Transcription Date**	9/17/2007 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF	**Digital Mapping Date**	6/29/2007 1:44:14PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050602
LATITUDE_DMS	Not processed per agreement with Plain
LONGITUDE_DD	Not processed per agreement with Plain
LONGITUDE_DMS	Not processed per agreement with Plain
MAPSHEET	39752 - 35081-D6
MAPSHEET	39388 - 35081-E6
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	194 - 03050105
ACREAGE	3.265926
HECTARES	1.321679
LATITUDE_DD	Not processed per agreement with Pla
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 24982 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 79554

Record Create User	MAF	**Record Create Date**	6/29/2007 1:44:20PM
Last Modified By	LGR	**Last Modified Date**	12/11/2015 3:24:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78148

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 271 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Pott Creek

Directions

Pott Creek: Located in southwestern Catawba County east of NC 10, 1.80 miles northeast of Banoak and 1.10 miles east of the Jacobs Fork River.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78148

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
36288	Padgett, 2008	Pott Creek tributarie	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006, 2007, 2012

Surveyor

Surveyor
James Padgett, NCNHP
Jackie Wagner, ASU

Survey Date 2012-03-16

Last Observation Date 2012-03-16 **First Observation Date** 2008

Element Occurrence Report

EO ID 24778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78148

EO Data Only 5-6 plants seen by Wagner et al. on 16 March 2012. Might be many more across property line but no landowner permission. None of plants with buds or blooms (Wagner 2012). 700-1000 clumps along Pott Creek and its tributaries (Padgett 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Possibly reduced viability in in 2012 (Robinson 2013). Good condition (2008)

Condition Rating

Size of EO Only 5-6 plants observed in 2012, but part of population may not have been seen (2012). Large population (2008).

Landscape Context Poor to fair. The forests it occurs in is immature (10-15 years old).

EO Rank C? - Possibly fair estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-16

EO Rank Comments Rank not give as an A due to condition of the natural community(Padgett 2008).

EO Rank Specifications Version Used

Description

EO Type

General Description Mature forests. There are lots of Liriodendron tulipifera coming up in the mix, with Quercus alba, Q. rubra, Q. coccinea, Carya alba, and Carya glabra. Acer rubrum and Oxydendrum arboreum are common. Shrubs are abundent along the steep slopes of the streams with Kalmia latifolia very common. Herbs are sparse due to the thick regrowth of canopy species. Galax, Chimaphilia maculata and Hypoxis hirsuta are common (Padgett 2008).

Min. Elevation	970.00	**feet**	295.66	**meters**
Max. Elevation	1,000.00	**feet**	304.80	**meters**
Observed Area	8.99	**acres**	3.64	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** Y - Yes

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private organization	The Nature Conservancy	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Element Occurrence Report

EO ID 24778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78148

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
F08NHP01NCUS	NHP Staff, 2008 field survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 10/14/2015 12:00:00AM
Transcribed By JEP **Transcription Date** 3/20/2008 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By MAF **Digital Mapping Date** 4/20/2007 10:12:55AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	8.991692
HECTARES	3.638823
LATITUDE_DD	Not processed per agreement with Plain
LATITUDE_DMS	Not processed per agreement with Plain
LONGITUDE_DD	Not processed per agreement with Plain
LONGITUDE_DMS	Not processed per agreement with Plain
MAPSHEET	39390 - 35081-E4
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
WATERSHED	191 - 03050102
HUC_12	030501020401
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 24778 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78148

Record Create User	MAF	**Record Create Date**	4/20/2007 10:12:57AM
Last Modified By	LGR	**Last Modified Date**	10/14/2015 2:55:49PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24777 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78146

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 270 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22401 **Parent EO Shape ID** 63,260.00 **Parent EO Number** 243

Site/Directions

Sites

Site ID	Name	Auto-calculated
1770	Jacob Fork West Corridor	N

Survey Site

Survey Site Name

South Fork Catawba River: Jacob Fork, Jacob Fork West (Sub EO of EO 243)

Directions

Jacob Fork West: Located in southwestern Catawba County 1.50 miles northwest of Banoak west of NC 10 betwen Lynn Mountain Road (SR1108) and Jacob Fork River. This is a sub EO of Parent EO 243.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24777 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78146

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
36287	2007; NCNHP	Jacob Fork West, T	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006, 2007

Surveyor

Surveyor
James Padgett, NCNHP

Survey Date 2012-07

Last Observation Date 2012-07 **First Observation Date** 2006

Element Occurrence Report

EO ID 24777 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78146

EO Data 2012: Area occupied delineated by Padgett in July 2012 as part of USFWS status survey (Padget 2012).
2006 and 2007: 75-100+ clumps along a stream head in an area just over and acre observed by Padgett in 2007 and 2006.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Fair condition.

Condition Rating

Size of EO Average size 1.3 acre.

Landscape Context Poor to fair. Immature forests with nearby pastures and some residential development.

EO Rank C? - Possibly fair estimated viability **EO Origin Subrank**

EO Rank Date 2008-03-20

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Along stream and slopes with Quercus alba, Liriodendron tulipifera, Kalmia latifolia, Vaccinium spp., Galax urceolata, and Tsuga canadensis.

Min. Elevation	1,000.00	**feet**	304.80	**meters**
Max. Elevation	1,040.00	**feet**	316.99	**meters**
Observed Area	1.30	**acres**	0.53	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** Y - Yes

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private organization	The Nature Conservancy	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 24777 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78146

References

Reference Code	Full Citation	EO Reference Primary
F12NHP01NCUS	NCNHP Staff, 2012 Field Survey	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F06NHP02NCUS	NHP Staff, 2006 Field survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/22/2015 12:00:00AM
Transcribed By	JEP	**Transcription Date**	3/20/2008 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF	**Digital Mapping Date**	4/20/2007 10:08:39AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	1.369267
HECTARES	0.554125
LATITUDE_DD	Not processed per agreement with Plaintiff/R
LATITUDE_DMS	Not processed per agreement with Plaintiff/R
LONGITUDE_DD	Not processed per agreement with Plaintiff/R
LONGITUDE_DMS	Not processed per agreement with Plaintiff/R
MAPSHEET	39390 - 35081-E4
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
WATERSHED	191 - 03050102
HUC_12	030501020202
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	MAF	**Record Create Date**	4/20/2007 10:08:41AM
Last Modified By	JTF	**Last Modified Date**	10/22/2015 11:12:11PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78144

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 269 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22401 **Parent EO Shape ID** 63,260.00 **Parent EO Number** 243

Site/Directions

Sites

Site ID	Name	Auto-calculated
1770	Jacob Fork West Corridor	N

Survey Site

Survey Site Name
South Fork Catawba River: Jacob Fork, Jacobs Fork West (Sub EO of EO 243)

Directions

Jacob Fork West: Located in southwestern Catawba County 1.50 miles northwest of Banoak west of NC 10 betwen Lynn Mountain Road (SR1108) and Jacob Fork River. This is a sub EO of Parent EO 243.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78144

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
36286	2007; NCNHP	Jacob Fork West, T	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006, 2007

Surveyor

Surveyor
James Padgett, NCNHP

Survey Date 2007

Last Observation Date 2007 **First Observation Date** 2006

EO Data 2006 and 2007: 200+ clumps occurring over a .73 acre area along an unnamed stream that from away from Lynn Mountain Road, north towards the river observed by Padgett in 2006 and 2007.

Element Occurrence Report

EO ID 24776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78144

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Good condition along the stream and adjacent slope with poor to fair conditions up along the ridge.

Condition Rating
Size of EO Average, 0.73 acre
Landscape Context Fair to good.

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2008-03-20
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Along stream and slopes with Quercus alba, Liriodendron tulipifera, Kalmia latifolia, Vaccinium spp., Galax urceolata, and Tsuga canadensis.

Min. Elevation	1,000.00	**feet**	304.80	**meters**
Max. Elevation	1,030.00	**feet**	313.94	**meters**
Observed Area	0.74	**acres**	0.30	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** Y - Yes
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private organization	The nature Conservancy	
Private individual	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 24776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 78144

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
F06NHP01NCUS	Field survey form completed by a NHP staff member for 2006 field work and not associated with a report produced by the survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/22/2015 12:00:00AM
Transcribed By	JEP	**Transcription Date**	3/20/2008 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF	**Digital Mapping Date**	4/20/2007 10:06:36AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	0.738254
HECTARES	0.298762
LATITUDE_DD	Not processed per agreement with P
LATITUDE_DMS	Not processed per agreement with P
LONGITUDE_DD	Not processed per agreement with P
LONGITUDE_DMS	Not processed per agreement with P
MAPSHEET	39390 - 35081-E4
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	191 - 03050102
HUC_12	030501020202
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	MAF	**Record Create Date**	4/20/2007 10:06:43AM
Last Modified By	JLA	**Last Modified Date**	10/22/2015 10:17:08AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24749 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77662

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 268 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Kudzu Farm

Directions

Kudzu Farm: Located in southern Rutherford County approximately 1.5 miles west by west-southwest of Harris north of SR 1122 (Duncan Road) approximately .40 mile.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24749 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77662

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
36021	2006; Padgett	Kudzu Farm: North	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006

Surveyor

Surveyor
James Padgett, NCNHP
Allen Ratzlaff, USFWS

Survey Date 2006-07-06

Last Observation Date 2006-07-06 **First Observation Date** 2006-07-06

Element Occurrence Report

EO ID 24749 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77662

EO Data 2006: Padgett observed approximately 25-30 clumps occurring in a small localized area along a secondary tributary near the head-end of it on 06 July 2006 (Padgett 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Poor to fair condition.

Condition Rating

Size of EO Very small in a 0.26 acre spot; 25-30 clumps (2008).

Landscape Context Fair along stream corridor and adjacent slopes and poor to the west and away from stream corridor.

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2008-03-20

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Dry-Mesic Oak-Hickory Forest. Dominating canopy species are Quercus abla, Q. coccinea, Liriodendron tulipifera, and Acer rubrum. Understory of Cornus florida and Oxydendrum arboreum. Some Kalima latifolia in the shrub layer. Herns are common with Hexastylis naniflora, Carex spp., Polystichum acrostichoides, Medeola virginana, Prenanthes serpentaria, and Coreopsis major present.

Min. Elevation	820.21	**feet**	250.00	**meters**
Max. Elevation	836.61	**feet**	255.00	**meters**
Observed Area	0.26	**acres**	0.11	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Henry Edwards	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 24749 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77662

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 11/18/2015 12:00:00AM
Transcribed By JEP **Transcription Date** 3/20/2008 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By MAF **Digital Mapping Date** 4/2/2007 11:32:44AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement **Y Coordinate** Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	0.261365
HECTARES	0.105771
LATITUDE_DD	Not processed per agreement with P
LATITUDE_DMS	Not processed per agreement with P
LONGITUDE_DD	Not processed per agreement with P
LONGITUDE_DMS	Not processed per agreement with P
MAPSHEET	40482 - 35081-B8
UTM_EASTING	Not processed per agreement with Plaintiff/Re
UTM_NORTHING	Not processed per agreement with Plaintiff/Re
UTM_ZONE	Not processed per agreement with Plaintiff/Re
WATERSHED	194 - 03050105
HUC_12	030501050501
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User MAF **Record Create Date** 4/2/2007 11:32:46AM
Last Modified By JTF **Last Modified Date** 11/18/2015 11:12:28PM
Do Not Exchange N
Last Received Date **Last Received Status**
Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 24748 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77660

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 267 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Kudzu Farm

Directions

Kudzu Farm: Located in southern Rutherford County approximately 1.5 miles west by west-southwest of Harris north of SR 1122 (Duncan Road) approximately 0.40 mile.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24748 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77660

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
36020	2006; Padgett	Kudzu Farm: North	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006

Surveyor

Surveyor
James Padgett, NCNHP
Allen Ratzlaff, USFWS

Survey Date 2006-07-06

Last Observation Date 2006-07-06 **First Observation Date** 2006-07-06

EO Data 2006: Estimate 150-250 clumps along stream corridor and adjacent slopes (Padgett 2008).

Element Occurrence Report

EO ID 24748 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77660

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Fair to good condition. Some ATV usage across stream.

Condition Rating
Size of EO Approximately 0.35 acres.
Landscape Context Good landscape context along the small stream and coves. Poor once you move away from stream corridor.

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2008-03-20
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak-Hickory Forest. Dominating canopy species are Quercus alba, Q. coccinea, Liriodendron tulipifera, and Acer rubrum. Understory of Cornus florida and Oxydendrum arboreum. Some Kalima latifolia in the shrub layer. Herbs are common with Hexastylis naniflora, Carex spp., Polystichum acrostichoides, Medeola virginana, Prenanthes serpentaria, and Coreopsis major present.

Min. Elevation	754.59	**feet**	230.00	**meters**
Max. Elevation	787.40	**feet**	240.00	**meters**
Observed Area	0.34	**acres**	0.14	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Henry Edwards	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 24748 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 77660

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/18/2015 12:00:00AM
Transcribed By	JEP	**Transcription Date**	3/20/2008 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF	**Digital Mapping Date**	4/2/2007 11:26:08AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	0.342052
HECTARES	0.138424
LATITUDE_DD	Not processed per agreement with
LATITUDE_DMS	Not processed per agreement with
LONGITUDE_DD	Not processed per agreement with
LONGITUDE_DMS	Not processed per agreement with
MAPSHEET	40482 - 35081-B8
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	194 - 03050105
HUC_12	030501050501
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	MAF	**Record Create Date**	4/2/2007 11:26:15AM
Last Modified By	LGR	**Last Modified Date**	11/18/2015 3:37:55PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24371 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74599

Summary

Classification Code

Subnational Scientific Name	*Hexastylis naniflora*	**Nation**	US	**Global Rank**	G3
Subnational Common Name	Dwarf-flowered Heartleaf	**Subnation**	NC	**Subnational Rank**	S3

Identifiers

ELCODE_BCD	PDARI03060	**EO Number**	266	**Field Office Number**	
ID Confirmed	Y - Yes				

Element

Element Subnational ID	15335	**Protection Status**	T	**Data Sensitive Element**	

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	Parent EO Shape ID	Parent EO Number

Site/Directions

Sites

Site ID	Name	Auto-calculated
2559	Indian Creek Slopes	N

Survey Site

Survey Site Name
Indian Creek Woods

Directions

Indian Creek Slopes is located on the west side of Indian Creek south of NC HWY 27 and east of SR 1149.

Locators

Latitude	[redacted]	**Longitude**	[redacted]
South	**North**	**East**	**West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D4	Cherryville			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24371 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74599

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34754	2001-05-31; Soule,Indian Creek Slopes		Point	Estimated	100.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
J.T. Soule, HARP
L.R. Gaffney, HARP
G. Wright

Element Occurrence Report

EO ID 24371 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74599

Survey Date 2001-05-31
Last Observation Date 2001-05-31 **First Observation Date** 2001-05-31
EO Data Present (Matthews et al 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2001-05-31
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Mesic Mixed Hardwood Forest with a canopy including Quercus rubra, PInus virginiana, Nyssa sylvatica and Carya sp. The subcanopy includes Oxydendron arboreum, Acer rubrum, Cornus florida, Nussa sylvatica, and Juglans nigra. Shrubs include Rhododendron nudiflorum, Corylus americana, Xathorhiza simplicissima, Sassafras albidum, and Arundinaria gigantea. Herbs present include Arisaema triphyllum, Circaea lutetiana ssp. canadensis, Verbesina sp., Sanguinaria canadensis, Microstegium vimineum, Galium sp., Lycopodium flabelliforme, Medeola virginiana, and Silene virginica.

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	G.P. York	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 24371 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74599

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N

Specimen

Specimen Description

Herb.UNCC Soule, Gaffney & Wright s n. 31 May 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	12/7/2015 12:00:00AM
Transcribed By	Amoroso	**Transcription Date**	12/14/2006 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	12/11/2006 8:32:10PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	7.71
HECTARES	3.125667
LATITUDE_DD	Not processed per agreement with P
LATITUDE_DMS	Not processed per agreement with P
LONGITUDE_DD	Not processed per agreement with P
LONGITUDE_DMS	Not processed per agreement with P
MAPSHEET	39754 - 35081-D4
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	191 - 03050102
HUC_12	030501020501
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 24371 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74599

Record Create User	JLA	**Record Create Date**	12/11/2006 8:37:21PM
Last Modified By	LGR	**Last Modified Date**	12/7/2015 2:57:53PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24370 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74597

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 265 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2558	June Bug Woods	N

Survey Site

Survey Site Name
June Bug Woods
Seagletown Woods

Directions

June Bug Woods occurs between SR 1205 and SR 1215 along Tanyard Creek, approximately 1.5 miles SE of Bethel Church.

Locators

Latitude Not processed per agreem **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E3	Reepsville			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24370 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74597

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

No other occurrences within 2 kilometers of this population.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34753	2000-05-30; Gaffney; June Bug Woods		Point	Estimated	100.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
J.T. Soule, HARP
L.R. Gaffney, HARP

Survey Date 2000-05-30

Last Observation Date 2000-05-30 **First Observation Date** 2000-05-30

EO Data Present (Matthews et al 2002).

Element Occurrence Report

EO ID 24370 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74597

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2000-05-30
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak Hickory Forest.

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	E. Seagle	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N

Element Occurrence Report

EO ID 24370 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74597

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	12/7/2015 12:00:00AM
Transcribed By	Amoroso	**Transcription Date**	12/14/2006 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	12/11/2006 8:16:35PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	7.71
HECTARES	3.125667
LATITUDE_DD	Not processed per agreement with Plain
LATITUDE_DMS	Not processed per agreement with Plain
LONGITUDE_DD	Not processed per agreement with Plain
LONGITUDE_DMS	Not processed per agreement with Plain
MAPSHEET	39391 - 35081-E3
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
WATERSHED	191 - 03050102
HUC_12	030501020402
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	JLA	**Record Create Date**	12/11/2006 8:15:05PM
Last Modified By	JTF	**Last Modified Date**	12/7/2015 11:12:04PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24369 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74595

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 264 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2557	Carpenter Creek Heartleaf Site	N

Survey Site

Survey Site Name
Carpenter Creek Heartleaf Site

Directions

Carpenter Creek Heartleaf Site is located on the NW quadrant of the intersection of Bethel Church Road (SR 1282) and NC 321 in central Lincoln County, south of Carpenter Creek.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E2	Maiden			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24369 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74595

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

No other occurrences are within 2 kilometers.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34752	2001-04-27; Gaffn	Carpenter Creek He	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
J.T. Soule, HARP
L.R. Gaffney, HARP

Survey Date 2001-04-27

Last Observation Date 2001-04-27 **First Observation Date** 2001-04-27

EO Data Present (Matthews et al 2002).

Element Occurrence Report

EO ID 24369 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74595

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2001-04-27
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak Hickory Forest

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	R. Hawkins	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N

Element Occurrence Report

EO ID 24369 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74595

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	12/7/2015 12:00:00AM
Transcribed By	Amoroso	**Transcription Date**	12/14/2006 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	12/11/2006 8:03:54PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39392 - 35081-E2
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
WATERSHED	191 - 03050102
ACREAGE	4.383579
LONGITUDE_DMS	Not processed per agreement with
HECTARES	1.773978
LATITUDE_DD	Not processed per agreement with Plain
LATITUDE_DMS	Not processed per agreement with Plain
LONGITUDE_DD	Not processed per agreement with Plain
COUNTY	1871 - NCLINC
HUC_12	030501020303

Record Maintenance

Record Create User	JLA	**Record Create Date**	12/11/2006 8:02:29PM
Last Modified By	JTF	**Last Modified Date**	12/7/2015 11:12:04PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74326

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 263 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 24206 **Parent EO Shape ID** 73,191.00 **Parent EO Number** 261

Site/Directions

Sites

Site ID	Name	Auto-calculated
2556	Leepers Creek Heartleaf Site	N

Survey Site

Survey Site Name

Leepers Creek Heartleaf Site, sub EO of 261 at Lincolnton Airport

Directions

Leepers Creek Heartleaf Site is located west of Camp Creek Road where Leepers Creek and Lick Run converge, about 0.5 mile north of NC 73 in central Lincoln County. This is a sub EO of 261.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74326

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34656	2001; Matthews	Leepers Creek	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Survevor
L.R. GAffney, HARP
G. Singletary
J.T. Soule, HARP

Element Occurrence Report

EO ID 24352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74326

Survey Date 2001-04-04
Last Observation Date 2001-04-04 **First Observation Date** 2000-10-20
EO Data 2000-2001: In flower on April 4, 2001 (Matthews et al 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2001-04-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Forested stream corridor with Betula nigra, Pinus echinata, P. virginiana, Carya ovata, C. tomentosa, Liriodendron tulipifera, Carpinus caroliniana, Cornus floridana, Fagus grandifolia, Quercus alba, Morus rubra, Ilex ambigua, Cornus amomum, Chionanthus virginicus, Tilia sp, Corylus cornuta, Vaccinium sp., Bignonia capreolata, Smilax sp., Campsis radicans, Vitis sp., Dioscorea villosa, Epifagus virginiana, Galium sp., Desmonium sp., Elephantopus tomentosus, E. carolinianus, Impatiens capensis, Tipularia discolor, Lycopodium flabelliforme, Uniola latifolia, Chimaphila maculata, Polystichum acrostichoides, Asplenium platyneuron, Botrychium virgininanum and others.

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	G. Singletary	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 24352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74326

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N

Specimen

Specimen Description

Herb.UNCC Hexastylis naniflora, Soule, Gaffney & Singletary s n., 4 April 2001.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/26/2015 12:00:00AM

Transcribed By Amoroso **Transcription Date** 12/11/2006 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 12/6/2006 8:48:30PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	28.035058
HECTARES	11.34543
LATITUDE_DD	Not processed per agreement with P
LATITUDE_DMS	Not processed per agreement with P
LONGITUDE_DD	Not processed per agreement with P
LONGITUDE_DMS	Not processed per agreement with P
MAPSHEET	39756 - 35081-D2
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	190 - 03050101
HUC_12	030501011301
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 24352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 74326

Record Create User	JLA	**Record Create Date**	12/6/2006 8:47:07PM
Last Modified By	JLA	**Last Modified Date**	10/26/2015 11:33:29AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73383

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 262 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 34778 **Parent EO Shape ID** 150,216.00 **Parent EO Number** 302

Site/Directions

Sites

Site ID	Name	Auto-calculated
2547	Rhyne Conservation Preserve	N

Survey Site

Survey Site Name
South Fork Catawba River, Rhyne Conservation Preserve (Sub EO of EO 302)
Rhyne Preserve Transplants
USFWS Flex Fund Monitoring Site 1

Directions

South Fork Catawba River, Rhyne Conservation Preserve: Five locations along the South Fork Catawba River and surrounding Southside N.C., on north-facing slope just south of an unnamed tributary of the South Fork Catawba River.
Location 1: North of a sharp right angle curve in the South Fork Catawba River and north of South Fork Road (SR 1248), within drainages approximately 0.1 mile north of the River.
Location 2: West of the South Fork Catawba River, along north facing slopes immediately south of South Fork Road (SR 1248).
Location 3: Small patch immediately northeast of the bridge of South Fork Road, east of the South Fork Catawba River.
Location 4: East of South Fork Catawba River and along drainages immediately east of South Fork Road (SR 1248).
Location 5: "South of abandoned mill, just south of Charlottes Lane; park at gate walk on paved road toward old mill (right fork). Then turn down old unpaved road bed (RR tracks on topo map). Cross stream on old bridge, plant occur on north facing slope east of bridge and west of the dam" (Franklin and Wichmann 2005), and extending upstream along the south side of the unnamed tributary approximatly 0.35 miles.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			
35081-D3	Lincolnton West			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Element Occurrence Report

EO ID 24218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73383

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Population was re-delineated by Bloom in 2016 using GPS points (Bloom 2016). Population delineated by Padgett as part of USFWS Flex Fund Status survey (2012). Shapefile delineating population provided by Chris Daves, S&ME Inc. (Mason 2006).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

Sub EOs are within 2km of each other and are not separated by 1km of unsuitable habitat. The principal EO is greater than 3km from other conspecific principal EOs (Mason 2006).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

The Hexastylis naniflora locations were mapped throughout the Rhyne Preserve using GPS data points collected in June of 2012 (Padgett 2012).

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Element Occurrence Report

EO ID 24218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73383

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
73454	2012; NCNHP	Location 1, South F	Polygon	Delimited				GPS, 10-meter acc
89946	Bloom 2016	Rhyne Conservatior	Polygon	Delimited				GPS, 10-meter acc
34252	2006; NCNHP	Rhyne Preserve intr	Polygon	Delimited				1998 aerial photos
88742	2012; NCNHP	Location 5, South F	Polygon	Delimited				GPS, 5-meter accu
88741	2012; NCNHP	Location 4, South F	Polygon	Delimited				GPS, 5-meter accu
88740	2012; NCNHP	Location 3, South F	Polygon	Delimited				GPS, 5-meter accu
88739	2012; NCNHP	Location 2, South F	Polygon	Delimited				GPS, 5-meter accu
88448	Padgett EO 262 plc	Rhyne Preserve, EC	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2000, 2005, 2012, 2013, 2014

Surveyor

Surveyor
Misty Franklin, NHP
Brenda Wichmann, NHP
J.T. Soule, HARP
L.R. Gaffney, HARP
C.A. McRae, HARP
Chris Daves, S&ME, 2006
S&ME staff
James Padgett, NHP
Laura Gadd, NHP
Kimberly Israel, NHP
Mike Schafale, NHP
Sean Bloom, CLC
Maxwell Feldman, NHP intern

Survey Date 2016-05-05

Last Observation Date 2016-05-05 **First Observation Date** 2000-04-05

EO Data 2016: 1,329 plants counted by Bloom on 5 May 2016 in 1.5 acres of monitoring plots. Estimated 19,873 total plants across 22.43 acres (Bloom 2016).
2015: 1,543 plants counted by Padgett and Feldman on 19 May 2015 in 1.5 acres of monitoring plots. Estimated 22,847 total plants covering the entire 22.21 acres (all 5 locations) (Padgett and Feldman 2015).
2014: 1,690 plants counted on 29 May 2014 in 1.5 acres of monitoring plots. Estimated 25,000 total plants covering the entire 22.21 acres (all 5 locations) (Padgett 2014).
2013: 1,492 plants counted from three permanent monitoring plots with the population. Population mapped to be 22.21 acres total with an estimated 22,000+ plants on the site on 19 July 2013 (Padgett 2013).
2012: 1,378 plants counted from three permanent plots for estimate of 20,404 plants scattered across 22.21 acres within the whole site on 18 July 2012 (Padgett 2012). Site remapped in May of 2012 (Padgett 2013).
2006: Daves reported that 675 plants were moved from the Lincolnton-Lincoln County Airport to a plot within the Rhyne Preserve on 18 and 19 October 2006 (Daves 2006). Reintroduction plot is a separate source feature within Location 5, south of the unnamed Tributary, east of the South Fork River (Robinson 2014).
2005: Estimate 70-100; 59 plants counted, 5 flowering 11 May 2005, along north facing slopes, south of an unnamed tributary to South Fork Catawba River (Location 5) (Franklin and Wichmann 2005).
2002: Present on 5 April 2000 (Matthews et al 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Element Occurrence Report

EO ID 24218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73383

Condition of EO	Areas of Hexastylis naniflora scattered along predominantly north-facing slopes in scattered and concentrated localities throughout the site. The condition of theses sites is good to very good with well established mature to maturing Oak-Hickory Forest (mostly Dry-Mesic Oak --Hickory Forest) present (Padgett 2012).
Condition Rating	
Size of EO	
Landscape Context	

EO Rank A - Excellent estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2016-05-05

EO Rank Comments Rank is based on all known locations (2016). >10,000 plants estimated to occur across all locations (2016). Rank specs followed: more than 500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest. The high rank of this EO is based on the transplanted population (Mason 2006).

EO Rank Specifications Version Used

Description

EO Type

General Description Chestnut Oak Forest (Dry Heath Subtype) and Piedmont Monadnock Forest (Typic Subtype) (Bloom 2016).

Min. Elevation		**feet**		**meters**
Max. Elevation		**feet**		**meters**
Observed Area	19.31	**acres**	7.81	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2224	Catawba Lands Conservancy Easement		Y - Yes	N
1266	NC Clean Water Management Trust Fund Easement		N - No	N
2223	Catawba Lands Conservancy Preserve			N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private organization	Catwaba Land Conservancy	

Owner Comments Sean Bloom contacted for permission to survey.

OwnerInfo_BCD N

Additional Topics

General Comments Observed threats: Public Access Trail (South Fork Rail Trail) allows the public access to a small population (Plot #2). Threat: High / Scope: Low / Immediacy: High (Bloom 2016).
In 2006 plants were transplanted to Location 5 from the Lincoln County airport population (see parent EO 261). Transplanted to a north-facing slope in natural habitat. Daves noted that the transplanted plants were moved to an area distinct from the naturally occurring population and could be monitored separately (pers. comm. to S. Mason, 10 October 2006). The transplant plot is indicated with a separate source feature within the EO.

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 24218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73383

References

Reference Code	Full Citation	EO Reference Primary
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F05WIC01NCUS	Wichmann, B. 2005. Field notebook for field survey/site visits conducted by Brenda Wichmann in 2005.	N
F05FRA01NCUS	Franklin, M. A. 2005. Field notebook for site visits conducted in 2005.	N
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N
F06CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 7/26/2016 12:00:00AM
Transcribed By Mason **Transcription Date** 11/2/2006 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 6/16/2016 9:48:34AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 24218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73383

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020504
LONGITUDE_DD	Not processed per agreement with Plaintiff/Rep
LATITUDE_DD	Not processed per agreement with Plaintiff/Rep
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Rep
LATITUDE_DMS	Not processed per agreement with Plaintiff/Rep
UTM_EASTING	Not processed per agreement with Plaintiff/Rep
UTM_NORTHING	Not processed per agreement with Plaintiff/Rep
UTM_ZONE	Not processed per agreement with Plaintiff/Rep
Acreage	28.7280068508
Hectares	11.62582985
WATERSHED	191 - 03050102
MAPSHEET	39755 - 35081-D3
MAPSHEET	39756 - 35081-D2
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	SCM	**Record Create Date**	11/2/2006 3:27:10PM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:14:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73191

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 261 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2556	Leepers Creek Heartleaf Site	N

Survey Site

Survey Site Name

Lincoln-Lincoln County Airport and Leepers Creek (parent EO of Sub EOs 258, 259, 263)

Directions

Lincoln-Lincoln County Airport and Leepers Creek: parent EO of Sub EOs 258, 259, & 263. See each sub EO for details.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73191

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. No other records occur closer than 4 kilometers (Amoroso 2015).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
73503	Parent EO 261	Lincoln-Lincoln Co	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2006-06-15

Last Observation Date 2006-06-15 **First Observation Date** 2005-10

EO Data See each sub EO of additional details.

Element Occurrence Report

EO ID 24206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73191

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO EO 258: 1246 in action area; 675 in footprint of area to be cleared (2006)
EO 259: 6461 plants (2006)
EO 263:
Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2006-06-15
EO Rank Comments Rank specs followed: more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.
EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 24206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73191

References

Reference Code	Full Citation	EO Reference Primary
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G06WEL02NCUS	Wells, Carolyn. USFWS-Asheville Field Office. Biological Opinion on the proposed obstruction-removal activities on Runway 05 of the Lincolnton-Lincoln County Regional Airport, 04 October 2006.	N
P06COL01NCUS	Cole, Brian. Field Supervisor, USFWS-Asheville. Letter dated 15 September 2006 requesting Section 7 formal consultation concerning Hexastylis naniflora at Lincolnton-Lincoln County Airport.	N
P06DAV01NCUS	Daves, Chris. Natural Resources Project Manager, S&ME Inc. Email to Suzanne Mason dated 23 October 2006 Re: Hexa nani at Lincolnton County Airport.	N
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	1/12/2016 12:00:00AM
Transcribed By	Mason	**Transcription Date**	10/26/2006 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	12/11/2013 10:05:49AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
ACREAGE	33.382153
HECTARES	13.509332
LONGITUDE_DD	Not processed per agreement with Plaint
HUC_12	030501011301
UTM_ZONE	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
MAPSHEET	39756 - 35081-D2
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 24206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73191

Record Create User	SCM	**Record Create Date**	10/26/2006 10:56:39AM
Last Modified By	JTF	**Last Modified Date**	1/12/2016 6:10:25PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73146

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 259 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 24206 **Parent EO Shape ID** 73,191.00 **Parent EO Number** 261

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 23 (Sub EO of EO 261)

Directions

Lincolnton-Lincoln County Airport, Runway 23: Sub EO of Parent EO 261. At the end of Runway 23 (the northeast end of the runway) and along Lick Run, to the south and southeast of the end of the runway. The occurrences are in 'Study Area 3' and 'Study Area 4' of Figure 1 on page 12 of the 2006 Biological Opinion (Cole, 2006; Wells, 2006).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73146

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34180	2006; S&ME	Group L, Lincolnto	Polygon	Delimited				1998 aerial photos
34181	2006; S&ME	Group I, Lincolnton	Polygon	Delimited				1998 aerial photos
34182	2006; S&ME	Group J, Lincolnto	Polygon	Delimited				1998 aerial photos
34178	2006; S&ME	Group H, Lincolnto	Polygon	Delimited				1998 aerial photos
34179	2006; S&ME	Group K, Lincolnto	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006

Element Occurrence Report

EO ID 24198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73146

Surveyor

Surveyor

Chris Daves, S&ME Inc., 2006
Catherine McRae, S&ME Inc., 2006
Lisa Beckstrom, S&ME Inc., 2006

Survey Date 2005-10

Last Observation Date 2005-10 **First Observation Date** 2005-10

EO Data 2005: Approximately 6,461 plants, in 5 groups [Group H: 2812 plants, Group I: 2278 plants, Group J: 19 plants, Group K: 156 plants, Group L: 726 plants], were observed in "Study Area 3" and "Study Area 4" by S&ME staff (Daves 2006; Wells 2006). Daves, McRae, and Beckstrom first observed the occurrence in October and November 2005 (Cole 2006, Wells 2006).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 6461 plants (2006)

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2005-10

EO Rank Comments Rank specs followed: more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**

Protection Comments These plants do not occur in an area that is currently protected.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Lincolnton-Lincoln County Airport	2012 permission denied

Owner Comments

OwnerInfo_BCD N

Element Occurrence Report

EO ID 24198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73146

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06WEL02NCUS	Wells, Carolyn. USFWS-Asheville Field Office. Biological Opinion on the proposed obstruction-removal activities on Runway 05 of the Lincolnton-Lincoln County Regional Airport, 04 October 2006.	N
P06DAV01NCUS	Daves, Chris. Natural Resources Project Manager, S&ME Inc. Email to Suzanne Mason dated 23 October 2006 Re: Hexa nani at Lincolnton County Airport.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 3/22/2016 12:00:00AM

Transcribed By Mason **Transcription Date** 10/23/2006 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By SCM **Digital Mapping Date** 10/23/2006 2:17:10PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 24198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 73146

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39756 - 35081-D2
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
ACREAGE	2.966069
HECTARES	1.20033
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
HUC_12	030501011301
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	SCM	**Record Create Date**	10/23/2006 1:55:28PM
Last Modified By	JTF	**Last Modified Date**	3/22/2016 6:10:42PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 24132 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 72564

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 258 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 24206 **Parent EO Shape ID** 73,191.00 **Parent EO Number** 261

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 05 (Sub EO of EO 261)

Directions

Lincolnton-Lincoln County Airport: Sub EO of Parent EO 261. Near displaced threshold area of Runway 05 (southwest end of runway). The occurrence is to the west of the end of Runway 05 and west of Airport Road (SR 1750), in a wooded area approximately 0.10 miles from end of the runway pavement and extends west. The occurrences are in 'Study Area 2' of Figure 1 on page 12 of the 2006 Biological Opinion (Cole, 2006; Wells, 2006).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 24132 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 72564

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Polygons mapped as accurately as possible using the small scale map that was provided (Mason 2006).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34172	2006; S&ME	Group G, Lincolnto	Polygon	Delimited				1998 aerial photos
34173	2006; S&ME	Group E and F (con	Polygon	Delimited				1998 aerial photos
34174	2006; S&ME	Group D, Lincolnto	Polygon	Delimited				1998 aerial photos
34175	2006; S&ME	Group C, Lincolnto	Polygon	Delimited				1998 aerial photos
34176	2006; S&ME	Group B, Lincolnto	Polygon	Delimited				1998 aerial photos
34177	2006; S&ME	Group A, Lincolnto	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2006

Element Occurrence Report

EO ID 24132 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 72564

Surveyor

Surveyor

Lisa Beckstrom, S&ME Inc., 2006
Carolyn Wells, USFWS, 2006
Chris Daves, S&ME Inc., 2006
Catherine McRae, S&ME Inc., 2006

Survey Date 2006-06-15

Last Observation Date 2006-06-15 **First Observation Date** 2005-10

EO Data 2006: Daves reported that on 18 and 19 October 2006 the 675 plants to be impacted were moved to the Rhyne Conservation Preserve [see EO 260] (Daves 2006). Wells observed the groups of plants in the Action Area on 15 June 2006; no data reported (Wells 2006). 1,246 individual plants, in 7 groups [Group A: 20 plants, Group B: 50 plants, Group C: 61 plants, Group D: 126 plants, Group E: 243 plants, Group F: 343 plants, Group G: 403 plants], were observed in March and April 2006 by S&ME staff within the "Action Area", also referred to as "Study Area 2". Of these, 675 plants are within the footprint of proposed the clearing and grubbing activities, which include all of groups A, B, and C and a portion of groups D, E, and F [see map in Wells (2006) G06WEL02NCUS]. These plants are expected to be moved to Rhyne Conservation area (Wells 2006 in G06WEL02NCUS, Daves 2006).
2005: Daves, McRae, and Beckstrom first observed the occurrence in October and November 2005 (Cole 2006, Wells 2006).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Monitoring of the individuals in the Action Area.

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Near airport runway; management activities expected to impact plants (2006)

Condition Rating

Size of EO 1246 in action area; 675 in footprint of area to be cleared (2006).

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2006-06-15

EO Rank Comments Rank specs followed: more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**

Protection Comments These plants do not occur in an area that is currently protected. The Airport is proposing to relocation the affected plants only to an off-site conservation area (Rhyne Conservation Area; 15 miles to the southwest of the Airport), where a conservation easement is currently held by Catawba Lands Conservancy (Wells 2006).

MA/Ownership

Element Occurrence Report

EO ID 24132 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 72564

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments Following the removal of the trees and shrubs, the ceared areas are to be maintained ans grassed fields, rendering the habitat unsuitable for Hexastylis naniflora (Wells 2006).

Ownership

Owner Type	Owner Name	Owner Note
Private organization	Lincolnton-Lincoln County Airport	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Indirect effects to the remaining plants include increased sunlight to the plants in areas adjacent to areas that are cleared and grubbed. This is expected to result in altered habitat conditions at the immediate edge of the tree line, making the area less hospitable to this species. Construction and maintenance of the existing Airport approach has also resulted in an influx of invasive species, which will likely result in additional loss of plants (Wells 2006).

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P06DAV01NCUS	Daves, Chris. Natural Resources Project Manager, S&ME Inc. Email to Suzanne Mason dated 23 October 2006 Re: Hexa nani at Lincolnton County Airport.	N
G06WEL02NCUS	Wells, Carolyn. USFWS-Asheville Field Office. Biological Opinion on the proposed obstruction-removal activities on Runway 05 of the Lincolnton-Lincoln County Regional Airport, 04 October 2006.	N
P06COL01NCUS	Cole, Brian. Field Supervisor, USFWS-Asheville. Letter dated 15 September 2006 requesting Section 7 formal consultation concerning Hexastylis naniflora at Lincolnton-Lincoln County Airport.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	10/12/2006 12:00:00AM
Transcribed By	Mason	**Transcription Date**	9/19/2006 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	10/23/2006 1:29:32PM

Element Occurrence Report

EO ID 24132 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 72564

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	[redacted]	**Y Coordinate**	[redacted]

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	190 - 03050101
UTM_EASTING	[redacted]
LATITUDE_DMS	[redacted]
ACREAGE	2.381026
HECTARES	0.963571
LONGITUDE_DD	[redacted]
UTM_ZONE	[redacted]
LATITUDE_DD	[redacted]
UTM_NORTHING	[redacted]
LONGITUDE_DMS	[redacted]
MAPSHEET	39756 - 35081-D2
HUC_12	030501011301
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	SCM	**Record Create Date**	9/19/2006 8:45:18AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22493 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63945

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 256 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Hoyle Crk-Micol Crk, tributary E of Hoyle Crk, East Burke High School transplant area (Sub EO of EO 178)

Directions

Catawba River: Hoyle Crk-Micol Crk, tributary east to Catawba River located just east of Hoyle Creek. This is a sub EO of Parent EO 178. This is the riparian relocation area referred to by Boaze (2008) [Note: it is unclear in Boaze (2008) whether EO 255 is considered part of the riparian relocation area. NHP assumed it was not when these occurrences were mapped because a separate plant count for that area was provided with the shapefiles].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22493 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63945

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located east of Sub EO 254 and Sub EO 255; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30548	2005; USFWS	Hoyle Crk-Micol C	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Pam Boaze, Fish and Wildlife Associates, Inc.

Survey Date 2010-05-26

Last Observation Date 2010-05-26 **First Observation Date** 2006-06

Element Occurrence Report

EO ID 22493 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63945

EO Data Monitoring data - 2010: Total of 376 flagged plants: 227 resident (193 alive + 34 alive without leaves) and 149 relocated (116 alive + 33 alive without leaves) plants observed at this site by Boaze on 26 May 2010. A considerable number of unflagged/not monitored plants are present in this area (Boaze 2010).
2009: Monitoring data - Total of 341 plants: 191 resident (161 alive + 30 alive without leaves) and 150 relocated (126 alive + 24 alive without leaves) plants observed at this site by Boaze on 01 June 2009. A considerable number of unflagged/not monitored plants are present in this area (Boaze 2009). 2008: Monitoring data - Total of 379 plants: 229 resident (207 alive + 22 alive without leaves) and 150 relocated (128 alive + 22 alive without leaves) plants observed at this site by Boaze in May 2008. No flowers present (Boaze 2008).
2006: Total of 415 plants: 265 resident and 150 relocated plants observed at this site by Boaze in July 2006. No flowers present (Boaze 2008). A total of 515 plants, scattered between EOs 254, 255, 256 [all located at the Burke County School Site] were located in the construction project area and were expected to be impacted by improvement activities. Of these, 286 were moved to a 6.1 acre protected area on-site in 2006 (Wells 2006 in G06WEL01NCUS). 210 plants observed in June 2006 (Boaze, 2006) [C. Wells, FWS copy of Management Plan].

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System. Fish and Wildlife Associates are to monitor first two of five years, and train representative from School System to monitor consistent with their methods in years 3-5. [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 376 plants plus a "considerable" number that were not counted/monitored (2009). 341 plants plus a "considerable" number that were not counted/monitored (2009). 379 plants (2008). 210 plants (2006)

Landscape Context

EO Rank C? - Possibly fair estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2010-05-26

EO Rank Comments Appears area surrounding occurrence was disturbed in the past, based on 1998 aerial photos. This assumption was used in assigning the rank. Because a description of habitat was not reported, the rank should be refined as additional information becomes available. Rank specs followed: 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments Plants are located within a permanent conservation easement (Boaze 2008).

MA/Ownership

Element Occurrence Report

EO ID 22493 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63945

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System, which is the entity charged with future management requirements at this site. Fish and Wildlife Associates Has produced a management plan for this site, persuant to the USFWS consultation which authorized impacts in this area. NC NHP was to receive a copy of this management plan [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments Owned by the County (Burke County School System).

OwnerInfo_BCD N

Additional Topics

General Comments There seem to be two species of Hexastylis present at this site, based on leaf appearance; however, positive identification has not been possible because the plants have not flowered during the monitoring years (Boaze 2008).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U09BOA01NCUS	Boaze, Pam. 2009. Monitoring report year-3: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.	N
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.	N
U10BOA01NCUS	Boaze, Pam. 2010. Monitoring report year-4: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/15/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/19/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	12/19/2005 8:57:19AM

Element Occurrence Report

EO ID 22493 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63945

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	0.549931
LATITUDE_DMS	Not processed per agreement with Plain
LONGITUDE_DD	Not processed per agreement with Plain
LONGITUDE_DMS	Not processed per agreement with Plain
MAPSHEET	38656 - 35081-G5
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
WATERSHED	190 - 03050101
ACREAGE	1.358905
HUC_12	030501010801
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	12/19/2005 8:57:21AM
Last Modified By	JTF	**Last Modified Date**	10/29/2015 11:11:40PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22492 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63943

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 255 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Hoyle Crk-Micol Crk, ravine E of Hoyle Crk, East Burke High School (Sub EO of EO 178)

Directions

Catawba River: Hoyle Crk-Micol Crk, ravine east of Hoyle Creek, drains into a tributary to the Catawba River. This is a sub EO of Parent EO 178. [Note: it is unclear in Boaze (2008) whether this is considered part of the riparian relocation area represented by EO 256. NHP assumed it was not when these occurrences were mapped because a separate plant count was provided with the shapefiles].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22492 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63943

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located west of Sub EO 256 and north-east of EO 254; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30547	2005; USFWS	Hoyle Crk-Micol C	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2006-06

Last Observation Date 2006-06 **First Observation Date** 2006-06

Element Occurrence Report

EO ID 22492 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63943

EO Data 2006: A total of 515 plants, scattered between EOs 254, 255, 256 [all located at the Burke County School Site] were located in the construction project area and were expected to be impacted by improvement activities. Of these, 286 were moved to a 6.1 acre protected area on-site in 2006 (Wells 2006 in G06WEL01NCUS). 155 plants observed in June 2006 (Boaze, 2006) [C. Wells, FWS copy of Management Plan.]

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System. Fish and Wildlife Associates are to monitor first two of five years, and train representative from School System to monitor consistent with their methods in years 3-5. [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 155 plants (2006)

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2006-06

EO Rank Comments Appears area surrounding occurrence was disturbed in the past, based on 1998 aerial photos. This assumption was used in assigning the rank. Because a description of habitat was not reported, the rank should be refined as additional information becomes available. Rank specs followed: less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Plants are located within a permanent conservation easement (Boaze 2008).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System, which is the entity charged with future management requirements at this site. Fish and Wildlife Associates Has produced a management plan for this site, persuant to the USFWS consultation which authorized impacts in this area. NC NHP was to receive a copy of this management plan [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Element Occurrence Report

EO ID 22492 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63943

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments Owned by the County (Burke County School System).
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 10/15/2015 12:00:00AM
Transcribed By Wichmann **Transcription Date** 12/19/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By BLW **Digital Mapping Date** 12/19/2005 8:56:01AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22492 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63943

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010801
UTM_ZONE	Not processed per agreement with Plain Not processed per agreement with Plain Not processed per agreement with Plain
WATERSHED	190 - 03050101
HECTARES	0.439144
LATITUDE_DD	Not processed per agreement with P
LATITUDE_DMS	Not processed per agreement with P
LONGITUDE_DD	Not processed per agreement with P
LONGITUDE_DMS	Not processed per agreement with P
MAPSHEET	38656 - 35081-G5
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
ACREAGE	1.085143
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	12/19/2005 8:56:03AM
Last Modified By	JTF	**Last Modified Date**	10/15/2015 11:20:01PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22491 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63941

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 254 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Hoyle Crk-Micol Crk, E bank of Hoyle Creek, East Burke High School Transplant Area (Sub EO of EO 178)

Directions

Catawba River: Hoyle Crk-Micol Crk, east bank of Hoyle Creek located just south of Catawba River. This is the "upland" relocation site referred to by Boaze (2008). This is a sub EO of Parent EO 178.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22491 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63941

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located west of EOs: 255 and 256; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30546	2005; USFWS	Hoyle Crk-Micol C	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Pam Boaze, Fish and Wildlife Associates, Inc.

Survey Date 2010-05-26

Last Observation Date 2010-05-26 **First Observation Date** 2006-06

Element Occurrence Report

EO ID 22491 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63941

EO Data Monitoring data - 2010: Total of 168+ plants: 44 resident (37 alive with leaves + 7 alive without leaves) and 124 relocated (87 alive + 37 alive without leaves) plants observed at this site by Boaze on 26 May 2010. Many unflagged plants were also present (Boaze 2010).
2009: Total of 173+ plants: 48 resident (42 alive with leaves + 6 alive without leaves) and 125 relocated (97 alive + 28 alive without leaves) plants observed at this site by Boaze on 01 June 2009. Eight of the relocated plants appeared to have reproduced with rhizomes; many unflagged plants were also present (Boaze 2009).
2008: Total of 174 plants: 49 resident (44 alive + 5 alive without leaves) and 125 relocated (108 alive + 17 alive without leaves) plants observed at this site by Boaze in May 2008. No flowers present (Boaze 2008).
2007: 52 resident plants observed at this site by Boaze in May 2007 [no report on the number of relocated plants still alive] (Boaze 2008).
2006: Total of 190 plants: 59 resident and 131 relocated plants observed at this site by Boaze in July 2006. No flowers present (Boaze 2008). A total of 515 plants, scattered between EOs 254, 255, 256 [all located at the Burke County School Site] were located in the construction project area and were expected to be impacted by improvement activities. Of these, 286 were moved to a 6.1 acre protected area on-site in 2006 (Wells 2006 in G06WEL01NCUS). 186 plants observed by Boaze in June 2006 (Boaze, 2006) [C. Wells, FWS copy of Management Plan.]

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System. Fish and Wildlife Associates are to monitor first two of five years, and train representative from School System to monitor consistent with their methods in years 3-5. [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 168 plants monitored plus many unflagged/not counted (2010). 173 plants monitored plus many unflagged/not counted (2009). 174 plants (2008). 186 plants (2006)

Landscape Context

EO Rank D? - Possibly poor estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2010-05-26

EO Rank Comments Appears area surrounding occurrence was disturbed in the past, based on 1998 aerial photos. This assumption was used in assigning the rank. Because a description of habitat was not reported, the rank should be refined as additional information becomes available. Rank specs followed: less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc. (Mason 2006).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation **feet** **meters**

Max. Elevation **feet** **meters**

Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Plants are located within a permanent conservation easement (Boaze 2008).

MA/Ownership

Element Occurrence Report

EO ID 22491 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63941

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments Site is subject to permanent protection agreement with Burke County and Burke County Public Schools System, which is the entity charged with future management requirements at this site. Fish and Wildlife Associates Has produced a management plan for this site, persuant to the USFWS consultation which authorized impacts in this area. NC NHP was to receive a copy of this management plan [C. Wells, USFWS, notes from files. Impacts discussed further in FWS consultation files, reference log number 4-2-06-020.]

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments Owned by the County (Burke County School System).

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries

Image N

References

Reference Code	Full Citation	EO Reference Primary
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.	N
U10BOA01NCUS	Boaze, Pam. 2010. Monitoring report year-4: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.	N
U09BOA01NCUS	Boaze, Pam. 2009. Monitoring report year-3: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/15/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/19/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	12/19/2005 8:53:14AM

Element Occurrence Report

EO ID 22491 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63941

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	0.443355
LATITUDE_DD	Not processed per agreement with Plaintiff/R
LATITUDE_DMS	Not processed per agreement with Plaintiff/R
LONGITUDE_DD	Not processed per agreement with Plaintiff/R
LONGITUDE_DMS	Not processed per agreement with Plaintiff/R
MAPSHEET	38656 - 35081-G5
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
WATERSHED	190 - 03050101
ACREAGE	1.09555
COUNTY	1828 - NCBURK
HUC_12	030501010801

Record Maintenance

Record Create User	BLW	**Record Create Date**	12/19/2005 8:53:17AM
Last Modified By	JTF	**Last Modified Date**	10/29/2015 11:12:18PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22468 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63724

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 252 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

South Fork Catawba River, Henry Fork, unnamed tributaries and US 321 (parent of 019 and 020).

Directions

South Fork Catawba River, Henry Fork, unnamed tributaries and US 321. This is a parent EO of two Sub EOs: 019 and 020 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22468 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63724

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Principal EO of 019 and 20 which were not separated by an area of persistently unsuitable habitat at the time of discovery and are therefore linked by principal EO 252; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49124	Parent EO 252	South Fork Catawb	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 22468 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63724

Survey Date 2007
Last Observation Date 2007 **First Observation Date** 1993-08-06
EO Data This is a parent EO of two Sub EOs: 109 and 020 (Wichmann 2005). See each sub EO for detailed EO data.
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-12
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22468 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63724

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F05NHP02NCUS	NHP Staff, 2005 field survey.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
P05HAR01NCUS	Harris, P. S. III. 2005. Letter regarding Hexastylis naniflora Inventory NCDOT TIP No. R-2824. 2pp.	N
U93CUR01NCUS	Currie, Robert R. 1993. Biological Opinion of the U.S. Fish and Wildlife Service concerning the effects of the construction of US 321 in Catawba County on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). 7pp.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	1/12/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/23/2015 1:53:36PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22468 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63724

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020103
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	9.78235947946
Hectares	3.95878653992
WATERSHED	191 - 03050102
MAPSHEET	39024 - 35081-F3
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	BLW	**Record Create Date**	12/6/2005 11:39:08AM
Last Modified By	LGR	**Last Modified Date**	1/12/2016 4:46:11PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22430 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63596

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 251 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N

Survey Site

Survey Site Name

Broad River: Hensons Creek Natural Area, Big lsand Plantation (east) (Sub of 099).

Directions

Broad River: Hensons Creek Natural Area, Big Island Plantation (east). This is a Sub EO of parent EO 099 (Wichmann 2005). Approximately 0.5 mile north of the Broad River, along the first unnamed tributary down-river from Big Island Bridge (SR 1106). James Padgett's 2001 sub-population A, see map for details.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22430 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63596

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28542	2005; Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2001-05-13

Last Observation Date 2001-05-13 **First Observation Date** 2001-05-13

Element Occurrence Report

EO ID 22430 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63596

EO Data 2001: 3-5,000 estimated in the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**

EO Rank Date 2001-05-13
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	200.00	**feet**	60.96	**meters**
Max. Elevation	240.00	**feet**	73.15	**meters**
Observed Area	11.00	**acres**	4.45	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22430 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63596

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/18/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/1/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 10:56:49AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2077.000000 - S.USNCHP*335
SITE	2493.000000 - S.USNCHP*4588
Site_Code	2077
Acreage	5.85868244976
Hectares	2.37092832997
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ

Record Maintenance

Element Occurrence Report

EO ID 22430 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63596

Record Create User	BLW	**Record Create Date**	12/1/2005 9:40:04AM
Last Modified By	LGR	**Last Modified Date**	11/18/2015 3:34:12PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22429 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63595

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 250 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N

Survey Site

Survey Site Name

Broad River: Hensons Creek Natural Area, ravine about 1.0 mile down from Big Island Bridge on the S side (sub of 099).

Directions

Broad River: Hensons Creek Natural Area, ravine about 1.0 river mile down-river from Big Island Bridge (SR 1106) on the south side of the river, where it starts to turn east. This is a Sub EO of parent EO 099 (Wichmann 2005). James Padgett's 2001 sub-population E, see map for details.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22429 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63595

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28538	2005: Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Qualitative ground survey

Surveyor

Surveyor

James Padgett, ASU

Survey Date 2001-05-13

Last Observation Date 2001-05-13 **First Observation Date** 2001-05-13

Element Occurrence Report

EO ID 22429 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63595

EO Data 2001: 3-5,000 estimated across the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**

EO Rank Date 2001-05-13
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Rich Cove Forest and Kalmia Bluff with Quercus spp, Carya spp, Fagus grandifolia, Cornus florida, Kalmia latifolia, Rhododendron sp, Hamamelis virginiana, Leucothoe sp, Polystichum acrostichoides, Osmunda sp, Toxicodendron radicans, and Parthenocissus quinquefolia. Some areas have been logged, but the coves have been untouched (Padgett 2001).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 22429 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63595

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/1/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 10:52:55AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reque
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reque
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
Acreage	3.9253391074
Hectares	1.58853082997
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff
LATITUDE_DD	Not processed per agreement with Plaintiff
Site_Code	65945
SITE	2077.000000 - S.USNCHP*335
SITE	2493.000000 - S.USNCHP*4588
Site_Code	2077

Record Maintenance

Element Occurrence Report

EO ID 22429 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63595

Record Create User	BLW	**Record Create Date**	12/1/2005 9:33:31AM
Last Modified By	JLA	**Last Modified Date**	10/8/2015 10:33:35AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22428 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63594

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 249 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N

Survey Site

Survey Site Name

Broad River: Hensons Creek Natural Area, ravine 0.5 mile down-river from Big Island Bridge (Sub of 099).

Directions

Broad River: Hensons Creek Natural Area, small ravine approximately 0.5 mile down-river from Big Island Bridge (SR 1106). This is a sub EO of parent EO 099 (Wichmann 2005). James Padgett's 2001 sub-populations C and D, see Map for details.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22428 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63594

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28536	2005; Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos
28537	2005; Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
James Padgett, ASU

Element Occurrence Report

EO ID 22428 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63594

Survey Date 2001-05-13
Last Observation Date 2001-05-13 **First Observation Date** 2001-05-13
EO Data 2001: 3,000-5,000 estimated accross the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**

EO Rank Date 2001-05-13
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Rich Cove Forest and Kalmia Bluff with Quercus spp, Carya spp, Fagus grandifolia, Cornus florida, Kalmia latifolia, Rhododendron sp, Hamamelis virginiana, Leucothoe sp, Polystichum acrostichoides, Osmunda sp, Toxicodendron radicans, and Parthenocissus quinquefolia. Some areas have been logged, but the coves have been untouched (Padgett 2001).

Min. Elevation	200.00	**feet**	60.96	**meters**
Max. Elevation	240.00	**feet**	73.15	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 22428 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63594

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/1/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 10:54:08AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2077.000000 - S.USNCHP*335
SITE	2493.000000 - S.USNCHP*4588
Site_Code	2077
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.15815403505
Hectares	0.873375299995
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 22428 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63594

Record Create User	BLW	**Record Create Date**	12/1/2005 9:32:21AM
Last Modified By	LGR	**Last Modified Date**	11/18/2015 3:30:41PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22416 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63462

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 248 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2441	Jonas Road Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: McKinny Creek, Jebb Lamb Road Bridge and Jonas Road Rare Plant Site (parent of 040 and 054).

Directions

Broad River: McKinny Creek, Jonas Road Rare Plant Site. This is a parent EO of two sub EOs: 040, 054 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22416 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63462

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 99 is 1.3 km to the north along tributary to Broad River (Amoroso 2105). All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29147	Parent EO 248	Broad River: McKi	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2005-04-12

Last Observation Date 2005-04-12 **First Observation Date** 1994-06

EO Data This is a parent EO of two sub EOs: 040 and 054 (Wichmann 2005). See each sub EO for detailed EO data.

Element Occurrence Report

EO ID 22416 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63462

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 054: 20-30 plants estimated seen on April 12, 2005 (Padgett 2005).
040: 150-200 plants estimated (Padgett 2005).
Landscape Context 040: Dry-Mesic Oak--Hickory Forest with a thick Kalmia understory (Padgett 2005).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2005-04-12
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22416 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63462

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/23/2015 12:00:00AM
Transcribed By	Wichmannn	**Transcription Date**	11/22/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/2/2015 10:06:59AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	6.2961584885
Hectares	2.54796887497
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
Site_Code	65945
SITE	2441.000000 - S.USNCHP*4314
SITE	2493.000000 - S.USNCHP*4588
Site_Code	62950

Record Maintenance

Element Occurrence Report

EO ID 22416 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63462

Record Create User	BLW	**Record Create Date**	11/22/2005 10:48:58AM
Last Modified By	JLA	**Last Modified Date**	10/26/2015 9:53:04AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22415 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63452

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 247 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2438	New Bethel Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: Floyds Creek near Harris: Parent EO

Directions

Broad River: Floyds Creek near Harris. This is a parent EO of 9 sub EOs: 013, 056, 080, 106, 114, 115, 173, 174, and 286 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			
35081-B7	Chesnee			
35081-C7	Forest City			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22415 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63452

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. Parent EO 243 occurs 2.6 km to the south along tributaries to Floyds Creek; Parent EO 99 occurs 2 km to the south west along a tributary to Richardson Creek (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
53010	Parent EO 247	Broad River: Floyds	Polygon	Delimited				1:24,000 topos (di
53011	Parent EO 247 tran	Tate Conservation I	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor

Element Occurrence Report

EO ID 22415 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63452

Survey Date 2015-04-23
Last Observation Date 2015-04-23 **First Observation Date** 1977
EO Data Broad River: Floyds Creek near Harris. This is a parent EO; see each sub EO for detailed EO data.
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 013: < 50 plants (2005).
056: <150 clumps (2002).
080: Estimate 50 (Padgett 2003).
106: 4,547 plants (DOT 2015); Estimate 200-300 (Padgett 2005).
114: 25 (S. Smith 2003).
115: 75 (Roeder 2003).
173: <20 (Roeder 2003).
174: 75 (S. Smith 2003).
286: 276 plants transplanted (2010).
Landscape Context Mesic Mixed Forest of medium quality, invasive species present (Wichmann summarizing sub EOs, 2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2015-04-23
EO Rank Comments EO rank is based on EO Rank Specs for this species and EO data for each sub EO, when taken together (Wichmann 2005).
EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 22415 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63452

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F00CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F15DOT01NCUS	N.C. Department of Transportation. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory, NCDOT.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F05NHP02NCUS	NHP Staff, 2005 field survey.	N
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F08CON01NCUS	Contributed. 2008. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/27/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/2/2005 12:00:00AM
Manual File Note			

Element Occurrence Report

EO ID 22415 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63452

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 11:28:26AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62947
SITE	2438.000000 - S.USNCHP*4311
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050502
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	14.4780370084
Hectares	5.85906275002
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
MAPSHEET	40119 - 35081-C7
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/21/2005 4:40:55PM
Last Modified By	LGR	**Last Modified Date**	7/27/2016 3:45:19PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22414 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63428

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 246 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River: Sandy Run Creek; west bank, 0.4 miles from confluence (Sub EO of EO 100)

Directions

West bank of Sandy Run Creek, 0.4 miles from its confluence with the Broad River. This is a sub EO of Parent EO 100 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22414 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63428

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30361	2001; Padgett	Sandy Run Creek w	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Survevor
NCDOT officals
James Padgett, ASU

Element Occurrence Report

EO ID 22414 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63428

Survey Date 2001
Last Observation Date 2001 **First Observation Date** 2001
EO Data Less than 100 plants esitimated (Padgett 2001)
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-11-22
EO Rank Comments EO Rank based on current EO Specs (Padgett 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Alluvial forest community with Betula nigra, Liriodendron tulipifera, Quercus spp., Carya spp., Pinus spp., Polystichium acrostichoides, Mitchella repens, and Lonicera japonica (Padgett 2001).

Min. Elevation	625.00	**feet**	190.50	**meters**
Max. Elevation	635.00	**feet**	193.55	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22414 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63428

References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Padgett	**Version Date**	11/22/2005 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/21/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	11/21/2005 1:37:30PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050505
ACREAGE	1.429858
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
MAPSHEET	40484 - 35081-B6
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
HECTARES	0.578645
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22414 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63428

Record Create User	BLW	**Record Create Date**	11/21/2005 1:34:40PM
Last Modified By	JTF	**Last Modified Date**	3/8/2016 2:55:16PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63307

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 245 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2439	Floyds Creek Tributary Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Floyds Creek Tributary Rare Plant Site (parent of 91, 113, and 175).

Directions

Broad River: Floyds Creek Tributary Rare Plant Site. This is a parent EO of three Sub EOs: 91, 113, and 175 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63307

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent EO 99 occurs 1.6 km to the west along Richardson Creek and tributaries, and 1.8 km to the south along the Broad River; Parent EO 247 occurs 2.6 km to the north along tributaries to Floyds Creek (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
39939	Parent EO 245	Broad River: Floyds	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 22403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63307

Survey Date 2010-01-27
Last Observation Date 2010-01-27 **First Observation Date** 2003-05-15
EO Data This is a parent EO of two Sub EOs: 113 and 175. See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**

EO Rank Date 2005-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63307

References

Reference Code	Full Citation	EO Reference Primary
F03REN02NCUS	Renninger, Heather. 2003. Field Survey Form.	N
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/22/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/1/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/22/2015 1:08:23PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63307

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62948
SITE	2493.000000 - S.USNCHP*4588
SITE	2439.000000 - S.USNCHP*4312
Site_Code	65945
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	6.93000455885
Hectares	2.80447767502
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/16/2005 2:25:25PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:56:50AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63260

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 243 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
1770	Jacob Fork West Corridor	N

Survey Site

Survey Site Name

South Fork Catawba River: Jacob Fork, Catawba Wildlife Club & Vicinity - Parent EO

Directions

South Fork Catawba River: Jacob Fork, Catawba Wildlife Club. This is a parent EO of sub EOs: 012, 242, 269, 270. See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63260

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO 271 occurs 2.2 km to the east, and EO 243 occurs 2.2 km to the north; there are no direct hydrologic connections (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49121	Parent EO 243	South Fork Catawb	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 22401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63260

Survey Date 2012-07
Last Observation Date 2012-07 **First Observation Date** 1981-05
EO Data This is a parent EO of sub EOs: 012, 242, 269, 270; see each sub EO for details.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 012: Gate locked (2005); Over 1,000 plants (Gaddy 1981)
242: 04 plants (2005).
269:200+ clumps occurring over a .73 acre area (2007).
270: 75-100+ clumps area just over and acre (2007).
Landscape Context 269: Good condition along the stream and adjacent slope with poor to fair conditions up along the ridge.
270: Poor to fair. Immature forests with nearby pastures and some residental development.

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**

EO Rank Date 2007
EO Rank Comments Possibly not more than 500 plants in entire site based on dated information in subEO 012 (Robinson 2016)

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
704	Catawba County Wildlife Club RHA		N - No	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 22401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63260

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
F85NHP01NCUS	NCNHP Staff, 1985 Field Survey.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F06NHP01NCUS	Field survey form completed by a NHP staff member for 2006 field work and not associated with a report produced by the survey.	N
F12NHP01NCUS	NCNHP Staff, 2012 Field Survey	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/27/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/15/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/27/2009 2:55:15PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	191 - 03050102
UTM_ZONE	Not processed per agreement with Plaintiff/R Not processed per agreement with Plaintiff/R
HECTARES	8.110004
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ
ACREAGE	20.040177
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39390 - 35081-E4
HUC_12	030501020202
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 22401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63260

Record Create User	BLW	**Record Create Date**	11/15/2005 5:48:28PM
Last Modified By	LGR	**Last Modified Date**	7/27/2016 3:41:43PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63256

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 242 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22401 **Parent EO Shape ID** 63,260.00 **Parent EO Number** 243

Site/Directions

Sites

Site ID	Name	Auto-calculated
1770	Jacob Fork West Corridor	N

Survey Site

Survey Site Name

South Fork Catawba River: Jacob Fork, Unnamed Tributary near Catawba Wildlife Club [Jacob Fork East] (Sub EO of EO 243)

Directions

South Fork Catawba River: Jacob Fork, unnamed tributary near Catawba Wildlife Club (Sub EO of Parent EO 243)

Locators

Latitude Not processed per agreement **Longitude** Not processed per agreement

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63256

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This sub EO is along the same tributary as EO 012 but is located outside the Jacob Fork West Corridor Natural Area and the Catawba Wildlife Club gate; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** Yes

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28465	2005; NCNHP	South Fork Catawba	Point	Estimated	25.00	Meters		GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Surveyor

Surveyor
Misty Franklin, NHP
Brenda Wichmann, NHP
James Padgett, NHP

Element Occurrence Report

EO ID 22400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63256

Survey Date 2005-05
Last Observation Date 2005-05 **First Observation Date** 2005-05
EO Data 2005: 4 individuals (Franklin et al. 2005).
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 4 individuals (Franklin et al. 2005).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2005-05
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Poor quality site with old tires and other trash (Franklin et al. 2005).
Min. Elevation 1,110.00 **feet** 338.33 **meters**
Max. Elevation 1,100.00 **feet** 335.28 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63256

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/22/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/15/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	11/15/2005 5:39:00PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	0.482729
COUNTY	1834 - NCCATA
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	
UTM_ZONE	
WATERSHED	191 - 03050102
HECTARES	0.195354
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	
LONGITUDE_DD	
LONGITUDE_DMS	
MAPSHEET	39390 - 35081-E4
HUC_12	030501020202

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/15/2005 5:39:02PM
Last Modified By	JLA	**Last Modified Date**	10/22/2015 10:14:35AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63252

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 241 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: Middle Sandy Run Crk, N side of Creek, extending S from its confluence with Grog Creek (Sub EO of EO 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek, north side of Creek, extending south from its confluence with Grog Creek. NC DOT Broad River Tract Site P. James Padgett's 2001 Site 8. This is a sub EO of Parent EO 100 (Wichmann 2005). Occurrence extends south from the confluence of Grog Creek for about 450 meters.

Locators

Latitude Not processed per agreement **Longitude** Not processed per agreement

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 22399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63252

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS data submitted used to create the source feature associated with this EO record (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30221	Sub EO 149 of prin	Broad River Tract, S	Polygon	Delimited				GPS, 3-meter accu
89590	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	

Surveyor

Surveyor
NC DOT Personnel

Element Occurrence Report

EO ID 22399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63252

Survey Date 2012-04-03
Last Observation Date 2012-04-03 **First Observation Date** 2001-2003
EO Data 2012: 150 plants counted by NCDOT biologists on 3 April 2012 (Bassette 2015).
2009: Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009).
2009: 12 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2003: 46 plants observed by NC DOT personnel from 2001-2003 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 150 plants (2012). 12 plants (2009). 46 plants observed by NC DOT personnel (Bassette 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2008-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Red oak, red maple, tulip poplar (Bassette 2003).
Min. Elevation 680.00 **feet** 207.26 **meters**
Max. Elevation 680.00 **feet** 207.26 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Occurrence is within the NC DOT mitigation site, The Broad River Tract; see U03BAS01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2429	NC Division of Mitigation Services Easement		Y - Yes	N
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
889	Broad River Greenway		Y - Yes	N

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC DOT	

Owner Comments "Ownership of the Broad River Tract will ultimately be conveyed to Cleveland County, with the Broad River Greenway Association acting as the County's steward to the property" (Bassette 2003).
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 22399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63252

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/21/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/15/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	4/21/2016 12:56:40PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63252

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.55110853575
Hectares	1.03239858997
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/15/2005 2:16:11PM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63199

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 240 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: Sandy Run Creek, at sharp bend south of SR 1194 (Sub of 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Sandy Run Creek, at sharp bend located south of SR 1194 and north of EO 073. See map for details.
NCDOT Broad River Tract Site K. James Padgett's 2001 Site 9C. This is a Sub EO of Principal EO 100 (Wichmann 2005)

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63199

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30302	2003; NCDOT con	Broad River Tract, S	Polygon	Delimited				GPS, 10-meter acc
89592	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
NC DOT Personnel
James Padgett, ASU

Element Occurrence Report

EO ID 22394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63199

Survey Date 2012-05-17
Last Observation Date 2012-05-17 **First Observation Date** 2001
EO Data 2012: 21 plants counted during surveys by NCDOT biologists in May 2012 (Bassette 2015).
2008: No plants located during surveys by NCDOT biologists in April 2008 (Bassette 2009).
2001: 18 plants observed by NC DOT in 2001 (Bassette 2003). Less than 20 clumps seen (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO No plants found (2008). Less than 20 clumps seen (Padgett 2001).
Landscape Context

EO Rank F - Failed to find **EO Origin Subrank**

EO Rank Date 2008-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Floodplain and Oak-hickory Forest communities along small unnamed tributary of Sandy Run Creeknear the conflunce. Carpinus caroliniana, Smilax ssp., Mitchella reppens, Polysticihium Acrostichoices, Quercus alba, Liriodendron tulipifera, Acer rubrum, and Oxydendrum arboreum (Padgett 2001).

Min. Elevation	680.00	**feet**	207.26	**meters**
Max. Elevation	680.00	**feet**	207.26	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** Y - Yes **TNC involvement**
Protection Comments Part of NC DOT Broad River Tract, mitigation purchase for the Shelby Bypass (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
889	Broad River Greenway		Y - Yes	N
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NCDOT	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 22394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63199

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 4/15/2016 12:00:00AM
Transcribed By Wichmann **Transcription Date** 11/21/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 4/21/2016 1:25:31PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63199

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.0863035587148
Hectares	0.0349258650026
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/15/2005 11:33:33AM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63116

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 239 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: Sandy Run Crk, tributary E of creek at first bend (Sub of 100).
NCDOT TIP: R-2824
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Sandy Run Creek, small unnamed tributary east of Sandy Run Creek where it first bends to the north-west. This is a Sub EO of Principal EO 100 (Wichmann 2005). James Padgett's 2001 Site K. NC DOT Broad River Tract Site EE (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63116

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30225	2003; NCDOT Cor	Broad River Tract, S	Polygon	Delimited				GPS, 3-meter accu
89581	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2001

Surveyor

Surveyor
NC DOT Personnel
Tim Bassette, NC DOT

Element Occurrence Report

EO ID 22387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63116

Survey Date 2012-03-28
Last Observation Date 2012-03-28 **First Observation Date** 2001
EO Data 2012: 94 plants counted by NCDOT biologists on 28 March 2012 (Bassette 2015).
2008: 47 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2001: 39 plants over 0.18 acres observed by NCDOT biologists in 2001 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2008-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Population EE is dominated by a Mesic Mixed Hardwood Forest (Piedmont Subtype) community on eastern side of Sandy Run Creek. A small steep sided drainage bisects the population area. Plants are located on southwest facing aspects. This low/mid
slope area is well stratified. Kalmia latifolia and Fagus grandiflora are the two dominant plants in this population. Medium quality habitat is present at this location.

Min. Elevation	650.00	**feet**	198.12	**meters**
Max. Elevation	700.00	**feet**	213.36	**meters**
Observed Area	0.18	**acres**	0.07	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Occurrence is contained within NC DOT mitigation site, the Broad River Tract; see reference U03BAS01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N
889	Broad River Greenway		Y - Yes	N

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

Element Occurrence Report

EO ID 22387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63116

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/21/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	4/21/2016 10:22:28AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63116

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.206965535609
Hectares	0.0837561099976
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/14/2005 3:01:58PM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:06:05AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63091

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 238 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River/Sandy Run Natural Areas: Sandy Run CK, E tributary N of SR 1195, NC DOT sites C- J (Sub of 100).
NCDOT Broad River Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Sandy Run Creek, unnamed tributary east of Creek and North of SR 1195, NC DOT Broad River Tract sites C,D,E,F,G,H, and J. James Padgett's 2001 Site 9B. This is a sub EO of Principal EO 100 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63091

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28926	2003; NCDOT CorBroad River Tract, S		Polygon	Delimited				GPS, 10-meter acc
30303	2003; NCDOT CorBroad River Tract, S		Polygon	Delimited				GPS, 10-meter acc
30305	2003; NCDOT conBroad River Tract, S		Polygon	Delimited				GPS, 10-meter acc
30306	2003; NCDOT CorBroad River Tract, S		Polygon	Delimited				GPS, 10-meter acc
30307	2003; NCDOT CorBroad River Tract, S		Polygon	Delimited				GPS, 10-meter acc
30308	2003; NCDOT CorBroad River Tract, S		Polygon	Delimited				GPS, 10-meter acc
89595	2012; NCDOT CorBroad River Greenv		Polygon	Delimited				GPS, 10-meter acc
89597	2012; NCDOT CorBroad River Greenv		Polygon	Delimited				GPS, 10-meter acc
89596	2012; NCDOT CorBroad River Greenv		Polygon	Delimited				GPS, 10-meter acc
89593	2012; NCDOT CorBroad River Greenv		Polygon	Delimited				GPS, 10-meter acc
89594	2012; NCDOT CorBroad River Greenv		Polygon	Delimited				GPS, 10-meter acc
89598	2012; NCDOT CorBroad River Greenv		Polygon	Delimited				GPS, 10-meter acc

Element Occurrence Report

EO ID 22386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63091

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	

Surveyor

Surveyor
NC DOT Personnel

Survey Date 2012-05-17

Last Observation Date 2012-05-17 **First Observation Date** 2001-2003

EO Data 2012: 1865 plants counted by NCDOT biologists 2012 (Bassette 2015).
2008: 787 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2001-2003: 752 plants observed by NC DOT personnel from 2001-2003 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 787 plants (2008). 752 plants observed by NC DOT personnel (Bassette 2003).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-04

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Pine and hardwoods-Tulip poplar, oaks, maple (Bassette 2003).

Min. Elevation	680.00	**feet**	207.26	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area	13.00	**acres**	5.26	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land N - No **More Protection** Y - Yes **TNC involvement**

Protection Comments Part of NC DOT of Broad River Tract, mitigation site; see U03BAS01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
889	Broad River Greenway		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N
2492	NC Department of Transportation Mitigation Site		Y - Yes	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC DOT	

Element Occurrence Report

EO ID 22386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63091

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen
Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 4/21/2016 12:00:00AM
Transcribed By Wichmann **Transcription Date** 11/14/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 4/21/2016 1:37:48PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63091

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	4.45120577847
Hectares	1.80134185001
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/14/2005 2:04:25PM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63089

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 237 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: Middle Sandy Run CK, W bank, south of SR 1195 (Sub EO of EO 100).

Directions

Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek, west bank, south of SR 1195. This is a sub EO of Parent EO 100 (Wichmann 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63089

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

GIS data submitted used to digitize the source feature associted with this EO record (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Basic EO data needed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30264	2005; Padgett	Middle Sandy Run (	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
L.L. Gaddy
Gill Newberry

Element Occurrence Report

EO ID 22385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63089

Survey Date 2012-03-15
Last Observation Date 2012-03-15 **First Observation Date** 1981-05
EO Data 2012: This site was visited in March 2012 as part of a site visit with NCDOT, USFWS, and ASU. Estiamated 200+ plants along slopes (Padgett 2015).
-- No information, GIS data submitted by Padgett in November 2005 (Wichmann 2005).
1995: Data for this EO and EO 014 lumped together by Newberry; 20 clumps observed at both EOs in 1995 but heavy tree fall had made the area hard to survey (Newberry 1996).
1981: This occurrence and EO 014 observed by Gaddy in May 1981. This occurrence and EO 014 observed by Gaddy in May 1981. Data for this EO and EO 014 lumped together by Gaddy; nearly 200 clumps observed at both EOs (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2001?
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	650.00	**feet**	198.12	**meters**
Max. Elevation	710.00	**feet**	216.41	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 22385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63089

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/28/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	11/14/2005 1:54:42PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HECTARES	1.063601
LATITUDE_DD	Not processed per agreement with Plaintiff/R
LATITUDE_DMS	Not processed per agreement with Plaintiff/R
LONGITUDE_DD	Not processed per agreement with Plaintiff/R
LONGITUDE_DMS	Not processed per agreement with Plaintiff/R
MAPSHEET	40484 - 35081-B6
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
WATERSHED	194 - 03050105
COUNTY	1839 - NCCLEV
ACREAGE	2.628204
HUC_12	030501050505

Record Maintenance

Element Occurrence Report

EO ID 22385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63089

Record Create User	BLW	**Record Create Date**	11/14/2005 1:54:49PM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22384 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63087

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 236 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River: Sandy Run Creek, tributary west of creek and N of SR 1186 at bend in Creek (Sub EO of EO 100).

Directions

A tributary from the west of Sandy Run Creek and north of SR 1186, at a large bend in Sandy Run Creek. This is a sub EO of Parent EO 100 (Wichmann 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22384 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63087

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

GIS data submitted used to digitze the source feature associated with this EO record (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30263	2001; Padgett	Sandy Run Creek, v	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Survevor
NCDOT officals
James Padget, ASU

Element Occurrence Report

EO ID 22384 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63087

Survey Date 2001
Last Observation Date 2001 **First Observation Date** 2001
EO Data Estimated 150-300 plants growing on moderately steep to very steep north to northeast-facing slope observed by Padgett in 2001 (Padgett 2001)

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2005-11-22
EO Rank Comments EO Rank based on current EO Specs (Padgett 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic-Oak Hickory forest along Sandy Run Creek extending east and south-east from the creek up steep slopes and along stream corridors. Dominant species include Liriodendron tulipifera, Quercus alba, Quercus rubra, Acer rubrum, Oxydendrum arboreum, Nyssa sylvatica, Cornus florida, Polystichum acrostichoides, and Goodyera pubescens (Padgett 2001).

Min. Elevation	680.00	**feet**	207.26	**meters**
Max. Elevation	720.00	**feet**	219.46	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Lake Houser, Inc.	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 22384 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63087

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/28/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	11/14/2005 1:51:24PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
COUNTY	1839 - NCCLEV
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
WATERSHED	194 - 03050105
HECTARES	1.134518
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40484 - 35081-B6
ACREAGE	2.803443
HUC_12	030501050505

Record Maintenance

Element Occurrence Report

EO ID 22384 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63087

Record Create User	BLW	**Record Create Date**	11/14/2005 1:51:27PM
Last Modified By	JTF	**Last Modified Date**	3/8/2016 3:59:21PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22383 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63085

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 235 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Tributary N of Broad River and SE of Lake Houser

Directions

Broad River: Tributary north of the Broad River and south-east of Lake Houser.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22383 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63085

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is within 2km of subEOs along Sandy Run and part of parent EO 100 (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30262	Padgett, 2001	Broad River: Tribut	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
NC DOT Personel
James Padgett, ASU

Survey Date 2001

Last Observation Date 2001 **First Observation Date** 2001

EO Data Padgett estimated 100-200 plants along a small stream in 2001 (Padgett 2001).

Element Occurrence Report

EO ID 22383 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63085

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-11-22
EO Rank Comments EO rank based on current EO Rank Specs (Padgett 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak-Hickory Forest community. Associted with Liriodendron tulipifera, Quercus alba, Quercus coccinea, Oxydendrum arboreum, Cornus florida, Polystichium acrostichoides, Chimaphilla maculata, and Goodyera pubescens (Padgett 2001).

Min. Elevation	670.00	**feet**	204.22	**meters**
Max. Elevation	700.00	**feet**	213.36	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22383 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63085

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/15/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/21/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	11/14/2005 1:50:10PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050506
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	
MAPSHEET	40484 - 35081-B6
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	
UTM_ZONE	
WATERSHED	194 - 03050105
HECTARES	0.696279
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	
ACREAGE	1.720537
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/14/2005 1:50:13PM
Last Modified By	LGR	**Last Modified Date**	10/15/2015 11:06:38AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22381 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63051

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 233 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River: Jolly Branch (Sub EO of EO 100).
NCDOT TIP: R-2824
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River: Jolly Branch. NC DOT Broad River Tract Sites: Q,R,S,T,U,W,X, and Z. James Padgett's 2001 Sites: R,S,T,U,V,W,X,Y, and Z. This is a sub EO of Parent EO 100 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22381 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63051

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Element Occurrence Report

EO ID 22381 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63051

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30238	2003; NCDOT Cor	Broad River Tract, .	Polygon	Delimited				GPS, 3-meter accu
30239	2003; NCDOT Cor	Broad River Tract, .	Polygon	Delimited				GPS, 3-meter accu
30240	2003; NCDOT Cor	Broad River Tract, .	Polygon	Delimited				GPS, 3-meter accu
30236	2003; NCDOT Cor	Broad River Tract, .	Polygon	Delimited				GPS, 3-meter accu
30241	2003; NCDOT Cor	Broad River Tract S	Polygon	Delimited				GPS, 3-meter accu
30242	2003; NCDOT Cor	Broad River Tract S	Polygon	Delimited				GPS, 3-meter accu
30243	2003; NCDOT Cor	Broad River Tract S	Polygon	Delimited				GPS, 3-meter accu
30244	2003; NCDOT Cor	Broad River Tract S	Polygon	Delimited				GPS, 3-meter accu
30245	2003; NCDOT Cor	Broad River tract Si	Polygon	Delimited				GPS, 3-meter accu
89567	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89559	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89560	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89562	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89564	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89563	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89557	2012: NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89558	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89565	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89561	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89566	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
NC DOT Personnel
Jackie Wagner, ASU

Survey Date 2012-04-01

Last Observation Date 2012-04-01 **First Observation Date** 2001

EO Data 2012: 2326 plants counted in populations Q, R, S, T, U, W, X, Y, and Z by NCDOT biologists 28, 29 March to 1 April 2012 (Bassette 2015).
2012: Wagner et al. counted 40 plants on 3 March 2012. Few scattered small plants. Almost no larger plants. None in full bloom. Nice site except for moderate erosion and ice storm damage. (Wagner 2012).
2008: 1,758 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2001: 1,698 plants observed by NC DOT in 2001 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 2326 plants (2012). 1,758 plants (2008). 1,698 plants observed by NC DOT in 2001 (Bassette 2003).

Landscape Context Pine and Hardwoods (Bassette 2003).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2012-04-01

EO Rank Comments

EO Rank Specifications Version Used

Element Occurrence Report

EO ID 22381 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63051

Description

EO Type
General Description Pine and Hardwoods (Bassette 2003).
Min. Elevation 700.00 **feet** 213.36 **meters**
Max. Elevation 800.00 **feet** 243.84 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** Y - Yes **TNC involvement**
Protection Comments Broad River Tract was purchased for Mitigation associated with the Shelby Bypass (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N
889	Broad River Greenway		Y - Yes	N

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC DOT	

Owner Comments Broad River Greenway?
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen
Specimen Description

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 22381 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 63051

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	6/8/2017 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	4/19/2016 2:05:26PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050506
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	13.2704254093
Hectares	5.37035892003
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/14/2005 1:01:50PM
Last Modified By	LGR	**Last Modified Date**	6/8/2017 10:41:46AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62937

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 232 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2237	Buffalo Creek Rare Plant Site	N

Survey Site

Survey Site Name

Buffalo Creek Rare Plant Site north and south of SR 1908 (parent EO of 046 and 231)

Directions

Buffalo Creek Rare Plant Site: north and south of SR 1908. This is a parent EO of 046 and 231 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62937

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 232 consists of sub occurrences along Buffalo Creek above Kings Mountain Lake. Parent EOs 214, 216, and 232 occur in an arc along Kings Mountain Lake and its tributaries, and are located within 2 km of each other in a landscape dissected by roads and scattered development. EO 85 occurs 2.1 km to the north; sub EO28 of Parent EO 216 occurs along Long Creek and is separated by 2.6 km as measured along suitable riparian habitat and by 1.6 km straight line across unsuitable habitat (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30202	Parent EO 232	Buffalo Creek Rare	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 22373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62937

Survey Date 2012-03-16
Last Observation Date 2012-03-16 **First Observation Date** 1998-05-18
EO Data This is a parent EO of two sub EOs: 046 and 231 (Wichmann 2005). See each sub EO for detailed data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**

EO Rank Date 2005-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area 2.50 **acres** 1.01 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62937

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
P00GAD01NCUS	Gaddy, L.L. 2000. Letter regarding endangered species [Hexastylis naniflora, Sagittaria fasciculata] resurvey/Oconee Nuclear Statuion Relicensing/Rights-of-way.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	1/12/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/9/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/5/2015 11:38:01AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62937

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV
HUC_12	030501050802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	14.6782100847
Hectares	5.940070045
WATERSHED	194 - 03050105
Site_Code	52410
SITE	2237.000000 - S.USNCHP*3285

Record Maintenance

Record Create User	BLW	**Record Create Date**	11/8/2005 5:41:39PM
Last Modified By	LGR	**Last Modified Date**	1/12/2016 4:41:49PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62927

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 231 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22373 **Parent EO Shape ID** 62,937.00 **Parent EO Number** 232

Site/Directions

Sites

Site ID	Name	Auto-calculated
2237	Buffalo Creek Rare Plant Site	N

Survey Site

Survey Site Name
Buffalo Creek Rare Plant Site, south (Sub EO of EO 232)
NCDOT B-2618

Directions

Buffalo Creek Rare Plant Site, south: Along the East and West sides of Buffalo Creek, south of SR 1908 (Wichmann 2005, based on maps).

Locators

Latitude Not processed per ag **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62927

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

Mapping based on hand drawn maps submitted (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

"Large extensive area [includes EO 046] exact boundary should be mapped. See accompaning maps" (Savidge 1998).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
26304	1998; NCDOT	Buffalo Creek Rare	Polygon	Delimited				1:24,000 topos (pa
30201	1998; NCDOT	Buffalo Creek Rare	Point	Estimated	25.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1998

Surveyor

Surveyor

Tim Savidge, NC DOT
L.L. Gaddy
Jackie Wagner, ASU

Element Occurrence Report

EO ID 22372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62927

Survey Date 2012-03-16
Last Observation Date 2012-03-16 **First Observation Date** 1998-05-18
EO Data 2012: Wagner et. al. counted 20 plants on 16 March 2012 (Wagner 2012).
2000: Site re-surveyed by Gaddy on 18 May 2000, identification confirmed, no count given (Gaddy 2000).
1998: 15-22 plant located near the bridge; unknown number farther south on the west side of the river (Wichmann interpreting maps from Savidge 1998)

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 15-22 plant located near the bridge; unknown number farther south on the west side of the river (Wichmann interpreting maps from Savidge 1998)
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-16
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	780.00	**feet**	237.74	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Associated with NC DOT project B-2618 (Wichmann 2005).

Element Occurrence Report

EO ID 22372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62927

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P00GAD01NCUS	Gaddy, L.L. 2000. Letter regarding endangered species [Hexastylis naniflora, Sagittaria fasciculata] resurvey/Oconee Nuclear Statuion Relicensing/Rights-of-way.	N
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/8/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	11/8/2005 5:36:36PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
Site_Code	52410
SITE	2237.000000 - S.USNCHP*3285
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
MAPSHEET	40122 - 35081-C4
WATERSHED	194 - 03050105
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_EASTING	
UTM_NORTHING	
LATITUDE_DD	
HECTARES	1.819792
LONGITUDE_DD	Not processed per agreement with Pl Not processed per agreement with Pl Not processed per agreement with Pl Not processed per agreement with Pl Not processed per agreement with Pl Not processed per agreement with Pl
UTM_ZONE	
ACREAGE	4.496787
HUC_12	030501050802

Record Maintenance

Element Occurrence Report

EO ID 22372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62927

Record Create User	BLW	**Record Create Date**	11/8/2005 4:41:59PM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62396

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 230 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20290 **Parent EO Shape ID** 48,332.00 **Parent EO Number** 97

Site/Directions

Sites

Site ID	Name	Auto-calculated
622	Sandy Run/Cliffside Natural Area	N

Survey Site

Survey Site Name
Broad River: Sandy Run/Cliffside Natural Area (Sub EO of EO 097)

Directions

Broad River: Sandy Run/Cliffside Natural Area. This is a sub EO of Parent EO 097 (Wichmann 2005). Sandy Run/Cliffside Natural Area: Concentrated about 0.5 mile further to the east of [sub EO 017], on intermittent tributary 2002.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62396

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49056	2002; NCNHP	Broad River: Sandy	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Survevor
Oakley

Survey Date 2002-04-25

Last Observation Date 2002-04-25 **First Observation Date** 2002-04-25

Element Occurrence Report

EO ID 22332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62396

EO Data Estimate of 50-100 plants on 25 April with hardwoods, Kalmia, Galax (Oakley 2002) [copied from EO 017 (Wichmann 2005)].

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Estimate of 50-100 plants on 25 April (Oakley 2002)
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2002-04-25
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Young-mature Mesic Mixed Hardwoods with heath on a moderate north-facing slope (Oakley 2002)
Min. Elevation 700.00 **feet** 213.36 **meters**
Max. Elevation 800.00 **feet** 243.84 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62396

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/17/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/22/2009 12:13:51PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	622
SITE	622.000000 - S.USNCHP*2252
WATERSHED	194 - 03050105
HECTARES	2.821385
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
ACREAGE	6.971766
UTM_NORTHING	Not processed per agreement with Plaintiff/Requested Not processed per agreement with Plaintiff/Requested
MAPSHEET	40120 - 35081-C6
HUC_12	030501050505
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	10/17/2005 1:08:59PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:42:26AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62320

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 229 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Second Broad River: Hogpen Branch
Hogpen Branch transplant area

Directions

Second Broad River: Hogpen Branch. Southern Rutherford County, 1 mile southwest of Henrietta and 3.75 miles east of Harris, NC. EO is located south of Hogpen Branch and north of Ferry Road (SR 2117), along an unnamed tributary (Padgett 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62320

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29906	2005; Padgett	Hog Pen Branch	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005

Surveyor

Surveyor
Allen Ratzlaff, USFWS
James Padgett, NHP

Survey Date 2005-10-03

Last Observation Date 2005-10-03 **First Observation Date** 2005-08-02

Element Occurrence Report

EO ID 22324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62320

EO Data Approximately 10% of the plants that were to be impacted from the asphalt plant, and were moved within the larger part of the population (USFWS 2007). Wells reported 500-550 plants in 2006, all of which are expected to be impacted by construction activities. Off-site mitigation is to occur [i.e. the plants are to be moved to a protected area off-site] (Wells 2006 [G06WEL01NCUS]). Estimate 300-400 plants over 0.13 mile along small unnamed tributary of Hogpen Branch (Padgett 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Unknown (2015). Estimate 300-400 plants over 0.13 mile (Padgett 2005)

Landscape Context Surrounding habitat has been destroyed by commercial development, indirect impacts unknown (Robinson 2015). The landscape around this site varies greatly with a cutover to the north and west, a home and numerous invasives to the south (Padgett 2005).

EO Rank C? - Possibly fair estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2007

EO Rank Comments Part of the population was transplanted from within the impact area of an asphalt and gravel plant to the larger population prior to construction (USFWS 2007). This population is thought to have been moved to a small area on the tract prior to development, but details are unknown (Robinson 2015). EO rank based on EO rank specs written for this species (Padgett 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Immediately adjacent to new gravel and aphalt quarry, based on aerial imagery observations (Robinson 2015).
Dry-Mesic Oak-Hickory Forest encrouched by invasive species to the south and improved quality to the north. Quercus alba, Lirisdendron tulipifera, Carya tomentosa, and Acer rubrum dominant in the canopy. The understory/shrub layer is sparse with Oxydendrum aboreum, Cornus florida, Nyssa sylvatica, Viburnum nudiflorum, Ilex opaca, and Smilax glauca. The herb layer is sparse throughout with Hypericum sp., sanicula canadense, Passiflora lutea, Desmodium sp., Helianthus sp., Aristolochia serpentaria, Polystichum acrostichoides. Invasive species inlcude: Rosa multiflora, Ligusicum sinense, and Hedera helix. The landscape around this site varies greatly with a cutover to the north and west, a home and numerous invasives to the south (Padgett 2005).

Min. Elevation	787.40	**feet**	240.00	**meters**
Max. Elevation	853.02	**feet**	260.00	**meters**
Observed Area	1.32	**acres**	0.53	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments This site has no formal protection and is part of a preposed rock quarry and asaphalt plant (Padgett 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Element Occurrence Report

EO ID 22324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62320

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Steve Huskey	1-828-657-4485
Corporation	? Whitmire	1-706-867-6101

Owner Comments Steve Huskey owns the largest portion of land where the proposed rock quarry and asaphalt plant are to be located (Padgett 2005).

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G07COL02NCUS	Cole, Brian. 2006. Biological Opinion for the Henrietta Quarry in Rutherford County (EO 229) and Its Effects on the Federally Endangered Dwarf-flowering heartleaf (Hexastylis naniflora). US Fish and Wildlife Service, Asheville Field Office, North Carolina.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
P07COL01NCUS	Cole, Brian. Field Supervisor, USFWS-Asheville. Letter dated 16 July 2007 regarding Section 7 formal consultation concerning Hexastylis naniflora at Henrietta Quarry, Rutherford County.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	4/15/2016 12:00:00AM
Transcribed By	Padgett	**Transcription Date**	10/25/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:39:09PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Element Occurrence Report

EO ID 22324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62320

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62952
SITE	2443.000000 - S.USNCHP*4316
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050407
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reque
LATITUDE_DD	Not processed per agreement with Plaintiff/Reque
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reque
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reque
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
Acreage	1.31883507934
Hectares	0.533714445008
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User MAF **Record Create Date** 10/11/2005 2:40:33PM

Last Modified By JTF **Last Modified Date** 4/15/2016 6:13:37PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 22306 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62112

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 227 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2774	Peaked Top Rare Plant Site	N

Survey Site

Survey Site Name

Peaked Top Rare Plant Site: Catawba River Watershed - Foothills Landfill

Directions

Catawba River Watershed: along drainiages to unnamed tributary to Abingdon Creek, approximately 0.5 miles north of Abbington Road (SR 1310), between Grassy knob and Peaked Top at Foothils Landfill (based on shapefiles provided by J. Gay, ESI).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Caldwell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-H5	Lenoir			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22306 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62112

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is more than 2.0 Kilometers from another EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
35329	2003-04, Gay	Peaked Top Rare Pl	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005, 2006

Surveyor

Surveyor

J. Gay, Environmental Services Inc., 2003
Golder Associates Personnel
James Padgett, NHP
Carolyn Wells, USFWS

Element Occurrence Report

EO ID 22306 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62112

Survey Date 2014-04-19
Last Observation Date 2014-04-19 **First Observation Date** 2003-04
EO Data Golder Associates collected data between 14-19 April 2014, from 15-0.1 acre monitoring plots during 2014. Plants were decreased to estimated 505 plants per acre, and approximately 16,463 plants within the entire tract (Golder 2014). Numerous plants occurring throughout the site in maturing forest. Vegetative plants were observed on 7-27-2006. (Padgett). Wells reported 30,780 plants were observed by Golder Associates Inc. staff in 2006. Of these, 6,150 were estimated to be impacted by construction activities; 30,780 plants are to be protected on-site in a 260 acre conservation area (Wells 2006). Approximately 28,712 individuals over 32.55 acres, determined by multiplying the average plant desity in plots (822 plants/acre) by the total area occupied (32.55 acres): 1,323 individual plants counted in fifteen 0.1 acre monitoring plots established over 32.55 acres in June 2005 (Golder Associates 2005). 16,000-19,000 clumps in about 33 acres reported by J. Gay et al. in April 2003. Plants in flower; some flowers sent to experts to confirm identification. H. heterophylla may be co-habitating at the same drainages (Gay 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Permanent monitoring plots and baseline data established to allow continued monitoring of Hexastylis naniflora (Golder Associates 2005).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Good condition with the natural communities it occurs in fairly immature. The site was apparently logged some time in the recent past, maybe 15-30 years ago (Padgett 2008).

Condition Rating
Size of EO 30,780 plants (2006). Approximately 28,712 individuals over 32.55 acres (2005)
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2014-04-19
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Young sucessional pine stands at the southern portion of the watershed and a more exposed mixed hardwood sucessional forest at the northern end, invasive exotic species encrouchment not significant (Golder Associates 2005). Twenty of the 33 acres is considered atypical habitat (Gay 2003).

Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area 32.55 **acres** 13.17 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** Y - Yes **TNC involvement**
Protection Comments Foothills Conservancy of North Carolina currently monitors an established easement (Padgett 2008). Area will be placed under a conseravation easement in 2005. No public access to the property (Gay 2003).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2232	Foothills Conservancy of North Carolina Easement		Questionat	N

More Management Y - Yes
Management Comments Non-native species will be removed from the property as part of the management plan (Gay 2003).

Element Occurrence Report

EO ID 22306 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62112

Ownership

Owner Type	Owner Name	Owner Note
Local government	Caldwell County	Caldwell County Landfill site.

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Specimens collected by Moye in 2007 were sent to L. L. Gaddy for confirmation (Moye & Gaddy correspondence 2007). Specimens sent to and confirmed by both Gaddy and Padgett in 2004 (Padgett 2008).

Additonal Topics Population decline from 2009 to 2014 is believed to be a response to the severe drought that occurred in this region during 2007 and 2008. Predation on the plants, presumably by woodland voles, was also noticed as a continuing phenomenon during this monitoring effort; it is now judged an observable part of the reduction in the population. Four of the plots were impacted by a wildfire during the winter of 2009 and not sampled at that time. Results from the current survey indicate that the fire has reduced growth and vigor for the plants located within these plots. An unusually cold winter and prolonged cool spring has also contributed to lower leaf and flower counts (Golder Associates 2014).

"Republic Services of NC, LLC (Republic) obtained Permit 200231111 from the U. S. Army Corps of Engineers under Section 404 of the Clean Water Act in December 2004 for discharge of fill into wetlands and streams in order to expand the Foothills Solid Waste Landfill in Caldwell County, NC. The expansion will impact sub-populations of Hexastylis naniflora...Republic proposed to mitigate the impacts to H. naniflora by preserving other sub-populations within 260 acres conservation easement on property owned by Caldwell County adjacent to the Foothills Landfill expansion (Golder Associates 2005).

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD02NCUS	Padgett, James. 2008. Caldwell County Natural Areas Inventory. North Carolina Natural Heritage Program, Department of Environment and Natural Resources, Raleigh, NC.	N
U05GOL01NCUS	Golder Associates. 2005. Report on Baseline Monitoring of Hexastylis naniflora Foothills conservation Area Caldwell County, North Carlina. 4pp and Appendix	N
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
U14GOL01NCUS	Golder Associates. 2014. Hexastylis naniflora Foothills Conservation Area Year 8 Monitoring Report. Caldwell County, North Carlina. 10pp and Appendices.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/1/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/1/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	2/8/2007 1:45:04PM

Element Occurrence Report

EO ID 22306 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 62112

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
UTM_EASTING	[redacted]
LONGITUDE_DD	[redacted]
LATITUDE_DD	[redacted]
HECTARES	13.26629
UTM_NORTHING	[redacted]
ACREAGE	32.781588
LATITUDE_DMS	[redacted]
LONGITUDE_DMS	[redacted]
UTM_ZONE	[redacted]
MAPSHEET	38288 - 35081-H5
WATERSHED	190 - 03050101
HUC_12	030501010702
COUNTY	1830 - NCCALD

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/29/2005 2:38:36PM
Last Modified By	JTF	**Last Modified Date**	10/28/2015 11:11:25PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22285 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61991

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 226 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Lake James (parent EO of Sub EOs: 045, 222, 223, 224, and 225)

Directions

Catawba River: Lake James. This is a parent EO that includes 5 sub EOs: 045, 222, 223, 224, and 225 (Wichmann 2005). See each sub EO for detailed directions. See map.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F7	Glen Alpine			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22285 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61991

Representation Accuracy

Represenstation Accuracy Very High

Rpresentation Accuracy Comments

GIS files provided by Devine Tarbell & Associates, Inc. (2006).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. This is an isolated Parent Element Occurrence record with the next nearest records 17-20 kilometers away (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34245	Parent EO 226	Catawba River: Lak	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor

Element Occurrence Report

EO ID 22285 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61991

Survey Date 2006-10-25
Last Observation Date 2006-10-25 **First Observation Date** 1998-05-18
EO Data This is a parent EO that includes 5 sub EOs: 045, 222, 223, 224, and 225 (Wichmann 2005). See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO
Landscape Context more information needed

EO Rank B - Good estimated viability **EO Origin Subrank**
EO Rank Date 2006-10-25
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description See each sub EO for description.
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Corporation	Duke Energy	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22285 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61991

References

Reference Code	Full Citation	EO Reference Primary
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.	N
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.	N
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/5/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/21/2015 2:15:09PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22285 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61991

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010607
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	29.0815923855
Hectares	11.7689210601
WATERSHED	190 - 03050101
MAPSHEET	39020 - 35081-F7
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/26/2005 6:01:56PM
Last Modified By	JLA	**Last Modified Date**	10/21/2015 2:15:42PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61976

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 225 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22285 **Parent EO Shape ID** 61,991.00 **Parent EO Number** 226

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Lake James, Linville Dam (sub EO of EO 226)

Directions

Lake James, north side of Linville River, located south of the Linville Dam and north of powerhouse. This is a sub EO of Parent EO 226.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F7	Glen Alpine			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61976

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GPS coordinates collected by Franklin 4 October 2006.

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29799	2006; NCNHP	Lake James, north s	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Surveyor
Michael Wolfe, Water Oak
Misty Franklin, NCNHP
Suzanne Mason, NCNHP

Element Occurrence Report

EO ID 22284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61976

Survey Date 2005-10-04
Last Observation Date 2005-10-04 **First Observation Date** 2002-2003
EO Data 2005: 370 plants counted in quick survey by Franklin & Mason on 4 October 2006, at least 500 plants probably present (Franklin 2006).
2002-2003: Approximately 300 plants (Wolfe 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Intact natural community (2006).
Condition Rating
Size of EO Approximately 500 plants (Franklin 2006). Approximately 300 plants (Wolfe 2003).
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2006-10-04
EO Rank Comments EO Rank based on EO Rank Specs for this species and most recent EO data.

EO Rank Specifications Version Used

Description

EO Type
General Description Intact natural community (Dry-mesic Oak-Hickory Forest grading into Acidic Cove to west along creek) with Rhododendron maximum, Liriodendron tulipifera, Quercus rubra, Q. montana, Liquidambar styraciflua, Oxydendrum arboreum, Kalmia latifolia, Pinus virginiana, Fagus grandifolia, Carya tomentosa, Cornus florida, Ilex opaca, Galax urceolata, Lobelia inflata, Polystichum acrostichoides, Cypripedium acaule, Medeola virginiana, black racer snake, and box turtle (Franklin 2006).

Min. Elevation	1,100.00	**feet**	335.28	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Duke Energy	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 22284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61976

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.	N
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF	**Digital Mapping Date**	11/1/2006 11:06:59AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39020 - 35081-F7
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
HECTARES	0.319581
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
ACREAGE	0.789698
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HUC_12	030501010607
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 22284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61976

Record Create User	BLW	**Record Create Date**	9/26/2005 5:33:19PM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22283 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61975

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 224 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22285 **Parent EO Shape ID** 61,991.00 **Parent EO Number** 226

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Lake James, Paddy Creek, SE of the dam (Sub of 226)

Directions

Lake James, Paddy Creek, bluff on south side of creek, located 0.2 miles southeast of Paddy Creek Dam. See map for details. This is a sub EO of Parent EO 226. This occurrence is designated population # 3 in Cole 2004.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F7	Glen Alpine			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22283 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61975

Representation Accuracy

Represenstation Accuracy Very High

Rpresentation Accuracy Comments

GIS files provided by Devine Tarbell & Associates, Inc. (2006).

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34243	2006; Devine Tarbe	Paddy Creek # 3, bl	Polygon	Delimited				GPS, 5-meter accu
34244	2006; Devine Tarbe	Paddy Creek # 3, w	Polygon	Delimited				GPS, 5-meter accu
88547	2006; Franklin and	Plot 3	Point	Estimated	1.00	Meters		1:24,000 topos (di
88546	2006; Franklin and	Plot 2	Point	Estimated	1.00	Meters		1:24,000 topos (di
88545	2006; Franklin and	Plot 1	Point	Estimated	1.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Element Occurrence Report

EO ID 22283 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61975

Surveyor

Surveyor

Misty Franklin, NCNHP
James McCracken, Devine Tarbell & Associates, Inc.
Michael Wolfe, Water Oak

Survey Date 2006-10-25

Last Observation Date 2006-10-25 **First Observation Date** 2003-04

EO Data 2006: 87 clumps counted during casual survey (more plants surely present) on 25 October 2006 by Franklin & McCracken; most plants seen were very depauperate, probably due to dense shade from young pines (Franklin 2006).
2003: Approximately 700 plants (Wolfe 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments McCracken (Devine Tarbell & Associates, Inc.) established 3 permanent monitoring plots in this area to monitor survivability over time. Plot centroid coordinates taken by Franklin (2006): 1 Not processed per agreement with P Not processed per agreement with Plaintiff/Requester (all NC State Plane, NAD 1983).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Poor habitat condition - dense, young white pine stand (Franklin 2006).

Condition Rating

Size of EO Approximately 700 plants (Wolfe 2003).

Landscape Context

EO Rank BC - Good or fair estimated viability **EO Origin Subrank**

EO Rank Date 2006-10-25

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Dense white pine stand, approximately 20-30 years old. Habitat in this location is severely degraded with very dense shade from the young pines and very suppressed understory. Associated species include Pinus strobus, Fagus grandifolia, Cornus florida, Hamamelis virginiana, Toxicodendron radicans, Galax urceolata, Ilex opaca, and a small amount of Ligustrum sinense around the edges of the population (Franklin 2006).

Min. Elevation	1,160.00	**feet**	353.57	**meters**
Max. Elevation	1,210.00	**feet**	368.81	**meters**
Observed Area	5.00	**acres**	2.02	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land N - No **More Protection** Y - Yes **TNC involvement**

Protection Comments Duke Energy has protected this population by placing a conservation buffer surrounding the areas inhabited by Hexastylis naniflora (McCracken pers. comm. to Franklin 2006). It is unknown whether this is a permanently binding agreement and who will hold the easement in the long term.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Element Occurrence Report

EO ID 22283 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61975

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Duke Energy	Contact James McCracken, consultant, for access to occurrence.

Owner Comments James McCracken, Devine Tarbell & Associates, Inc., 704.342.7373, James.McRacken@DevineTarbell.com.
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.	N
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.	N
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/14/2015 1:53:33PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22283 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61975

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010607
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	5.50259035644
Hectares	2.22682275002
WATERSHED	190 - 03050101
MAPSHEET	39020 - 35081-F7
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/26/2005 5:32:42PM
Last Modified By	JTF	**Last Modified Date**	10/21/2015 11:11:10PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22282 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61974

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 223 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22285 **Parent EO Shape ID** 61,991.00 **Parent EO Number** 226

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Lake James, Paddy Creek, unnamded tributary NE of dam (Sub of 226)

Directions

Lake James, Paddy Creek, south side of Powerhouse Road, 0.15 mile south of powerhouse, north side of power transmission line. See map for details. This is a sub EO of Parent EO 226. This occurrence is designated population # 2 in Cole 2004.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F7	Glen Alpine			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22282 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61974

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS files provided by Devine Tarbell & Associates, Inc. (2006).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34241	2006; NCNHP and	Paddy Creek #2, La	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Survevor

Misty Franklin, NCNHP
James McCracken, Devine Tarbell & Associates, Inc.
Michael Wolfe, Water Oak

Element Occurrence Report

EO ID 22282 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61974

Survey Date 2006-10-25
Last Observation Date 2006-10-25 **First Observation Date** 2003-04
EO Data 2006: All plants in sub-population # 2 are expected to be destroyed by seismic remediation project (Cole 2004, McCracken pers. comm. to Franklin 2006). USFWS Biological Opinion (2004) authorized extirpation of 'population 2'. The Amended Biological Opinion (2005) acknowledged impacts to 'populations 1 and 3' (Wells 2006).
2003: Approximately 700 plants (Wolfe 2003)

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank X - Extirpated **EO Origin Subrank**

EO Rank Date 2006-10-25
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	1,150.00	**feet**	350.52	**meters**
Max. Elevation	1,210.00	**feet**	368.81	**meters**
Observed Area	17.00	**acres**	6.88	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** N - No **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Duke Energy	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 22282 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61974

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.	N
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/21/2015 2:13:27PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010607
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
Acreage	4.94161536533
Hectares	1.99980387501
WATERSHED	190 - 03050101
MAPSHEET	39020 - 35081-F7
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 22282 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61974

Record Create User	BLW	**Record Create Date**	9/26/2005 5:31:55PM
Last Modified By	JTF	**Last Modified Date**	10/21/2015 11:11:10PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22281 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61973

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 222 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22285 **Parent EO Shape ID** 61,991.00 **Parent EO Number** 226

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Lake James, SW of Bridge downstream from Powerhouse (Sub of 226)

Directions

Lake James, northeast facing slope located southeast of the Lake, 0.25 miles southeast of Linville dam and 0.2 miles south of powerhouse. This is a sub EO of Parent EO 226. This occurrence is designated population # 1 in Cole 2004.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F7	Glen Alpine			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22281 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61973

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS files provided by Devine Tarbell & Associates, Inc. (2006).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34242	2006; NCNHP and	Paddy Creek # 1, La	Polygon	Delimited				GPS, 3-meter accu
88736	2006; NCNHP and	Plot 2, Paddy Creek	Point	Estimated	1.00	Meters		GPS, 3-meter accu
88737	2006; NCNHP and	Plot 3, Paddy Creek	Point	Estimated	1.00	Meters		GPS, 3-meter accu
88735	2006; NCNHP and	Plot 1, Paddy Creek	Point	Estimated	1.00	Meters		GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Element Occurrence Report

EO ID 22281 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61973

Surveyor

Surveyor

Misty Franklin, NCNHP
James McCracken, Devine Tarbell & Associates, Inc.
Michael Wolfe, Water Oak

Survey Date 2006-10-25

Last Observation Date 2006-10-25 **First Observation Date** 2003-Spring

EO Data 2006: 156 clumps counted during casual survey (more plants surely present) on 25 October 2006 by Franklin & McCracken; most plants seen were very depauperate, probably due to dense shade from young pines (Franklin 2006).
2003: Approximately 300 plants seen during late March-early April (Wolf 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments McCracken (Devine Tarbell & Associates, Inc.) established 3 permanent monitoring plots in this area to monitor survivability over time. Plot centroid coordinates taken by Franklin (2006): Not processed per agreement with Plaintiff/Requester (all NC State Plane, NAD 1983).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Poor community - young white pine stand (2006).

Condition Rating

Size of EO Approximately 300 plants seen during late March-early April (Wolf 2003).

Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2006-10-25

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Dense white pine stand, approximately 30 years old. Habitat in this location is severely degraded with very dense shade from the young pines and very suppressed understory. Associated species include Pinus strobus, Cornus florida, Liriodendron tulipifera, Liquidambar styraciflua, Kalmia latifolia, Galax urceolata, Ilex opaca, Polystichum acrostichoides, Quercus alba, Goodyera sp., Sassafras albidum, Mitchella repens, and Cypripedium acaule (Franklin 2006).

Min. Elevation	1,150.00	**feet**	350.52	**meters**
Max. Elevation	1,210.00	**feet**	368.81	**meters**
Observed Area	5.00	**acres**	2.02	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** Y - Yes **TNC involvement**

Protection Comments Duke Energy has protected this population by placing a conservation buffer surrounding the areas inhabited by Hexastylis naniflora (McCracken pers. comm. to Franklin 2006). It is unknown whether this is a permanently binding agreement and who will hold the easement in the long term.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Element Occurrence Report

EO ID 22281 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61973

Management Comments This population would benefit from thinning of the white pine stand and allowing the natural community to regenerate. The pines are obviously suppressing the population as well as the natural community (Franklin 2006).

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Duke Energy	Contact James McCracken, consultant, for access to occurrence.

Owner Comments James McCracken, Devine Tarbell & Associates, Inc., 704.342.7373, James.McRacken@DevineTarbell.com.

OwnerInfo_BCD N

Additional Topics

General Comments A small portion of this population may have been negatively affected by siltation from a nearby large-scale soil moving project. This problem was quickly discovered by Duke Energy staff, soil deposits were removed, and silt-fencing was installed to prevent further siltation. Likely fewer than 10 plants Hexastylis naniflora plants were affected by this incident (Franklin 2006).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G04COL01NCUS	Cole, Brian. 2004. Biological Opinion based on review of proposed seismic remediation activities at Paddy Creek Dam at the Bridgewater Hydroelectric Development of the Catawba-Wateree Hydroelectric Project, Federal Energy Regulatory Commission No. 2232, Burke County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). US Department of the Interior Fish and WIldlife Service, Asheville Field Office, 1260 Zillicoa Street, Asheville, NC 28801.	N
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
P03WOL01NCUS	Wolfe, M. 2003. Trasmittal reporting occurrences of Hexastylis naniflora near Lake James. 13 August 2003. 2pp.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/22/2015 9:34:13AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Element Occurrence Report

EO ID 22281 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61973

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010607
LONGITUDE_DD	Not processed per agreement with Plaintiff/Resp
LATITUDE_DD	Not processed per agreement with Plaintiff/Resp
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Resp
LATITUDE_DMS	Not processed per agreement with Plaintiff/Resp
UTM_EASTING	Not processed per agreement with Plaintiff/Resp
UTM_NORTHING	Not processed per agreement with Plaintiff/Resp
UTM_ZONE	Not processed per agreement with Plaintiff/Resp
Acreage	17.3655926544
Hectares	7.02761686504
WATERSHED	190 - 03050101
MAPSHEET	39020 - 35081-F7
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User BLW **Record Create Date** 9/26/2005 5:30:21PM

Last Modified By JTF **Last Modified Date** 1/6/2016 2:25:43PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 22266 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61802

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 219 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
263	Smith Cliff/Henry Fork River	N

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork, Upper Fork

Directions

South Fork Catawba River, Henry Fork, Upper Fork. Northeast side of Henry Fork River about 250 meters northwest of the River Road bridge, on both sides of an old roadbed behind a small field (Franklin and Wichmann 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22266 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61802

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO 303 is within 2.0 kilometers of this EO, but is separated by unsuitable habitat (Padgett 2015). EO 303 also has characteristics of both H. naniflora and H heterophylla. This area may be a hybridization zone, and is therefore kept as a separate EO.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29746	2005; NCNHP	South Fork Catawba	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Surveyor

Surveyor
Misty Fraklin, NHP
Brenda Wichmann, NHP

Element Occurrence Report

EO ID 22266 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61802

Survey Date 2005-05-06
Last Observation Date 2005-05-06 **First Observation Date** 2005-05-06
EO Data 31 plants total, 10 flowering observed by Franklin and Wichmann on 06 May 2005 (Franklin and Wichmann 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 31 plants total, 10 flowering (Franklin and Wichmann 2005).
Landscape Context Wooded slopes

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2005-05-06
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Banks of old roadbed cutting through wooded slopes; Associated species include: Rhododendron maximum, Lecothoe fontanesiana, Calycanthus floridus, Pinus strobus, Pyrularia pubera, Trillium catesbaei and Gaultheria procumbens (Franklin and Wichmann 2005).
Min. Elevation 1,160.00 **feet** 353.57 **meters**
Max. Elevation 1,190.00 **feet** 362.71 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 22266 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61802

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05FRA01NCUS	Franklin, M. A. 2005. Field notebook for site visits conducted in 2005.	N
F05WIC01NCUS	Wichmann, B. 2005. Field notebook for field survey/site visits conducted by Brenda Wichmann in 2005.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/27/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/21/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 3:40:07PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	1062
SITE	1062.000000 - S.USNCHP*2085
HUC_12	030501020101
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.53396872504
Hectares	0.216089810016
WATERSHED	191 - 03050102
MAPSHEET	39022 - 35081-F5
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 22266 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61802

Record Create User	BLW	**Record Create Date**	9/21/2005 11:14:39AM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 3:59:16PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61762

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 217 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Brushy Creek, Tributaries N of SR 1308 and E of NC 226, (parent EO of Sub EOs 190,191,192,193, & 305).

Directions

Broad River: Brushy Creek, Tributaries north of SR 1308 and east of NC 226. This is a parent EO of sub EOs 190, 191, 192, and 193, and 305 (Robinson 2015). See each sub EO for detailed directions.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61762

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29730	Parent EO 217	Broad River: Brush	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2015

Last Observation Date 2015 **First Observation Date** 2000-10-27

EO Data This is a parent EO of sub EOs 190, 191, 192, and 193 (Wichmann 2005). See each sub EO for detailed EO data.

Element Occurrence Report

EO ID 22256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61762

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO over 500
Landscape Context medium quality sites

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2000-10-27
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61762

References

Reference Code	Full Citation	EO Reference Primary
F15CON01NCUS	2015. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT01NCUS	Haney, Matt. 2015. 2013 Hexastylis naniflora (Dwarf-Flowered Heartleaf) Portion of Element Occurrence No. 191: Site 7 Inventory and Monitoring Report US 74 Shelby Bypass (TIP R-2707) Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	9/3/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/19/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	2/2/2016 11:07:21AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050701
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	19.3136003193
Hectares	7.81594881499
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Element Occurrence Report

EO ID 22256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61762

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/19/2005 2:05:57PM
Last Modified By	JLA	**Last Modified Date**	4/14/2016 12:00:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22250 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61687

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 216 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	Parent EO Shape ID	Parent EO Number

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Kings Mountain Reservoir:, tribs N & S of SR 2068 & E of US 180 (parent of 28, 197-200)

Directions

Buffalo Creek: Kings Mountain Reservoir: Tributaries north and south of SR 2068 and east of US 180. This is a parent EO of six sub EOs: 28, 196, 197, 198, 199, and 200 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22250 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61687

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 216 consists of sub occurrences along tributaries to Kings Mountain Lake. Parent EOs 214, 216, and 232 occur in an arc along Kings Mountain Lake and its tributaries, and are located within 2 km of each other in a landscape dissected by roads and scattered development (Amoroso 2015). All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29714	Parent EO 216	Buffalo Creek: King	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 22250 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61687

Survey Date 2016-08-03
Last Observation Date 2016-08-03 **First Observation Date** 1998-2000
EO Data This is a parent EO of four sub EOs: 197, 198, 199, and 200 (Wichmann 2005). See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 197: 2,076 clumps (Bassette et al. 2000).
198: 450 plants (DOT 2007), 87 clumps (Bassette et al. 2000).
199: 0,408 clumps (Bassette et al. 2000).
200: 0,035 clumps (Bassette et al. 2000).
028: 300 to 400 plants (DOT 2005).
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2000-11-01
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 22250 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61687

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F04CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/19/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/5/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/19/2015 9:28:31AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22250 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61687

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	22.4733002138
Hectares	9.09463597006
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/16/2005 12:00:49PM
Last Modified By	JLA	**Last Modified Date**	8/19/2016 1:34:27PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22237 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61516

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 214 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Tributaries N and S of SR 2047 (parent EO of sub EOs: 201-205, 209, 212, and 213)

Directions

Buffalo Creek: Tributaries north and south of SR 2047. This is a parent EO of 7 sub EOs: 201, 202, 203, 204, 205, 209, 212, and 213 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22237 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61516

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 214 consists of sub occurrences along an unnamed tributary to Buffalo Creek below Kings Mountain Lake. Parent EOs 214, 216, and 232 occur in an arc along Kings Mountain Lake and its tributaries, and are located within 2 km of each other in a landscape dissected by roads and scattered development (Amoroso 2015). All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29657	Parent EO 214	Buffalo Creek: Trib	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor

Element Occurrence Report

EO ID 22237 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61516

Survey Date 2012-03-15
Last Observation Date 2012-03-15 **First Observation Date** 1998-2000
EO Data This is a parent EO of 7 sub EOs: 201, 202, 203, 204, 205, 209, 212, and 213 (Wichmann 2005). See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2000-10-26
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22237 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61516

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/23/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/17/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:16:05AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reques
LATITUDE_DD	Not processed per agreement with Plaintiff/Reques
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reques
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reques
UTM_EASTING	Not processed per agreement with Plaintiff/Reques
UTM_NORTHING	Not processed per agreement with Plaintiff/Reques
UTM_ZONE	Not processed per agreement with Plaintiff/Reques
Acreage	23.5472662596
Hectares	9.52925527997
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22237 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61516

Record Create User	BLW	**Record Create Date**	9/13/2005 3:14:09PM
Last Modified By	JLA	**Last Modified Date**	10/20/2015 11:09:28AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22236 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61506

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 213 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Ravine just S of SR 2047, BYP Site 25 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek: Ravine just south of SR 2047, Shelby Bypass Site 25. This is a sub EO of Parent EO 214 (Wichmann 2005). "South of SR 2047 (Borders Road) and east of Ruckers Road, situated along forested slopes and stream bank of an unnamed intermittent tributary to Buffalo Creek" (Bassette 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22236 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61506

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29652	2000; NCDOT	Shelby Bypass Site	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Element Occurrence Report

EO ID 22236 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61506

Surveyor

Surveyor

Tim Bassette, NC DOT
Jared Gray, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT
Jackie Wagner, ASU

Survey Date 2012-03-15

Last Observation Date 2012-03-15 **First Observation Date** 2000-10-25

EO Data 2012: Wagner et. al. observed 50-100 plants on 15 March 2012. (Wagner 2012).
2000: 743 over 2.77 acres (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 50-100 plants (2012). 743 over 2.77 acres (Bassette 2003).

Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-15

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Steep, forested slopes and stream banks of an unnamed intermittent tributary to Buffalo Creek. English Ivy (hederal helix) dominates the site's vegetative ground cover (Bassette 2003).

Min. Elevation 760.00 **feet** 231.65 **meters**

Max. Elevation 810.00 **feet** 246.89 **meters**

Observed Area 2.77 **acres** 1.12 **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments Site to be affected by proposed Shelby bypass. Site will be part of an extended DOT right of way.

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC Department of Transportation	

Owner Comments

Element Occurrence Report

EO ID 22236 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61506

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "Construction activities will bisect the site [EO 213], thereby impacting 158 DFHL plants over 0.59 ac situated witin the contruction limits...The remaining part of these sites not impacted by direct construction activities will be protected by interrelated and interdependent on-site conservation actions. Indirect effects from induced development will not occur because the proposed Bypass/SR 2047 (Borders Road) interchage is at a grade. Cumulative effects are not assumed to occur because the existing land use (single family residential) and proposed land development (low density residential) will, in effect, remain the same around Sites 24 and 25 [EO 213, in part] (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/3/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:09:40AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22236 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61506

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.58281913731
Hectares	1.04523143494
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/13/2005 3:01:42PM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22235 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61497

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 212 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Slope along Tributary just N of SR 2047, BYP Site 23 (Sub EO of EO 214).
NCDOT TIP: R-2707

Directions

Buffalo Creek: Slope along Tributary just N of SR 2047, Proposed Shelby Bypass site 23. This is a sub EO of Parent EO 214 (Wichmann 2004).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22235 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61497

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29651	2000; NCDOT	Shelby Bypass site 1	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor

Tim Bassette, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT

Element Occurrence Report

EO ID 22235 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61497

Survey Date 2000-10-26
Last Observation Date 2000-10-26 **First Observation Date** 1998-2000
EO Data 2000: 97 plants seen over 0.48 acres by Bassette et al. on 26 October 2000 (Bassette 2003).
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 97 plants seen over 0.48 acres by Bassette et al. on 26 October 2000 (Bassette 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2000-10-26
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description "Small amount of invasive English Ivy" (Bassette 2003).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "According to the City of Shelby's existing land use plan, Site 14 [EO 212] sits in an undeveloped tract of land. The city's land development plan proposes low-density residential development on this land parcel. Consequently, private development resulting in the loss of Site 14 would be considered a cumulative effect" (Bassette 2003).
Topic Keywords

Keywords
IMPACTS
NC DOT

Element Occurrence Report

EO ID 22235 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61497

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/17/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 9:38:38AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requests
LATITUDE_DD	Not processed per agreement with Plaintiff/Requests
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requests
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requests
UTM_EASTING	Not processed per agreement with Plaintiff/Requests
UTM_NORTHING	Not processed per agreement with Plaintiff/Requests
UTM_ZONE	Not processed per agreement with Plaintiff/Requests
Acreage	0.248603037002
Hectares	0.100606235002
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22235 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61497

Record Create User	BLW	**Record Create Date**	9/13/2005 2:34:30PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:53:48AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22234 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61473

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 211 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
1013	First Broad Hop-Hornbeam Natural Area	N

Survey Site

Survey Site Name

First Broad River: Hop-Hornbeam Natural Area and unnamed tributary (parent EO of sub EOs 072 and 194)

Directions

First Broad River: Hop-Hornbeam Natural Area and unnamed tributary north of SR 1827. This is a parent EO of two Sub EOs: 072 and 194 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22234 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61473

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent EO217 is located 2.3km west; EO 195 is located 2.8km to the east (Amoroso 2015)

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29649	Parent EO 211	First Broad River: F	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor

Element Occurrence Report

EO ID 22234 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61473

Survey Date 2002-04-26
Last Observation Date 2002-04-26 **First Observation Date** 2000-11-01
EO Data This is a parent EO of two Sub EOs: 072 and 194 (Wichmann 2005). See each sub EO for detailed EO data.
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 072: <100 (Oakley 2002).
194:1,965 clumps over 3.0 acres (Bassette et al. 2000).
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**
EO Rank Date 2002-04-26
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22234 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61473

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	3/23/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/5/2015 11:13:20AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050702
LONGITUDE_DD	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
Acreage	17.3832027403
Hectares	7.03474342498
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22234 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61473

Record Create User	BLW	**Record Create Date**	9/13/2005 1:18:14PM
Last Modified By	LGR	**Last Modified Date**	3/23/2016 3:24:51PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22233 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61466

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 210 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Drowning Creek, unnamed tributary at SR 1628 NCDOT TIP: R-2707

Directions

Catawba River: Drowning Creek, unnamed tributary at SR 1628 (Bassette 2003).

Locators

Latitude Not processed per agreement **Longitude** Not processed per agreement

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F4	Longview			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22233 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61466

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Basic EO data needed; GPS data needed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29648	2001; Bassette	Catawba River: Drc	Line	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1998-2000

Surveyor

Survevor
Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation Personnel

Survey Date 2001-10

Last Observation Date 2001-10 **First Observation Date** 1998-2000

Element Occurrence Report

EO ID 22233 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61466

EO Data As of October 2001, no direct, indirect, or cumulative impacts to [EO] have occurred since project construction (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO No quantitative data (Wichmann 2005).
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2001-10
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	1,000.00	**feet**	304.80	**meters**
Max. Elevation	1,100.00	**feet**	335.28	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "B-3122: THis [NCDOT] project replaces Bridge No. 24 over an unnamed creek that crosses SR 1628 in Burke County. The project let date was February 2001 and construction was completed in August of that same year... The project permits do not authorize impacts to DFHL. The October field review indicated that no direct, indirect, or cumulative impacts to DFHL have occurred since project contruction (Bassette 2003).

Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 22233 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61466

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U07MOY01NCUS	Moye, W.S. 2007. Highly Ranked Rare Plants of Smith Cliffs, Burke County, North Carolina. Unpublished notes.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Wichmann **Version Date** 9/19/2005 12:00:00AM

Transcribed By Wichmann **Transcription Date** 9/19/2005 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By BLW **Digital Mapping Date** 9/13/2005 12:00:33PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	18.81
HECTARES	7.6122
LATITUDE_DD	Not processed per agreement with Plaintiff/Re
LATITUDE_DMS	Not processed per agreement with Plaintiff/Re
LONGITUDE_DD	Not processed per agreement with Plaintiff/Re
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Re
MAPSHEET	39023 - 35081-F4
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
WATERSHED	190 - 03050101
HUC_12	030501010804
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User BLW **Record Create Date** 9/13/2005 12:00:36PM

Last Modified By LGR **Last Modified Date** 12/7/2015 11:56:01AM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 22221 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61424

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 209 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Tributary E of the County Fairgrounds, BYP Site 22 (Sub EO of EO 214)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek: Tributary east of the County Fairgrounds, Proposed Shelby Bypass Site 22. This is a sub EO ofParent EO 214 (Wichmann 2005). "Located just east of SR 2063 (Kemper Road), Site 22 sits along the stream banks of unnamed perennial and intermittent tributaries to Buffalo Creek" (Bassette 2003).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22221 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61424

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29644	2000; NCDOT	Shelby Bypass Site	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor

Tim Bassette, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT

Element Occurrence Report

EO ID 22221 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61424

Survey Date 2000-10-26
Last Observation Date 2000-10-26 **First Observation Date** 2000
EO Data 2000: 332 plants over 1.02 acres, of these approximately 136 plants over 0.42 acres within construction limits (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 332 plants over 1.02 acres, of these approximately 136 plants over 0.42 acres within construction limits (Bassette 2003).
Landscape Context

EO Rank BC - Good or fair estimated viability **EO Origin Subrank**

EO Rank Date 2000-10-26
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	750.00	**feet**	228.60	**meters**
Max. Elevation	800.00	**feet**	243.84	**meters**
Observed Area	1.02	**acres**	0.41	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Subject to direct impacts associated with the proposed Shelby Bypass (Bassette 2003).
Topic Keywords

Keywords
IMPACTS
NC DOT

Element Occurrence Report

EO ID 22221 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61424

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/3/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	7/22/2014 2:06:50PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	3.21963020817
Hectares	1.30294012997
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22221 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61424

Record Create User	BLW	**Record Create Date**	9/13/2005 9:02:05AM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:53:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22219 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61408

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 208 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Sites 32-35 (TIP R-2707, R-2824)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek: Potts Creek, tributaries north of I-74, Proposed Shelby Bypass Sites 32, 33, 34, 35. [Note: this occurrence originally had site 36 mapped; this site was subsequently identified as being H. minor. Therefore, source feature corresponding to site 36 was deleted].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B4	Grover			
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22219 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61408

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This EO was not linked with EO 207 (less than 2km away) because the two are separated by a major highway (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29627	1998-2000, NCDOBuffalo Creek: Pott		Polygon	Delimited				1:24,000 topos (di
29629	1998-2000; NCDOBuffalo Creek: Pott		Polygon	Delimited				1998 aerial photos
29630	1998-2000, NCDOBuffalo Creek: Pott		Line	Estimated	50.00	Meters		1:24,000 topos (di
29695	1998-2000, NCDOBuffalo Creek: Pott		Line	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2001

Element Occurrence Report

EO ID 22219 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61408

Surveyor

Surveyor

Jennifer Harrison, NC DOT
Logan Williams, NC DOT
Matt Haney, NC DOT
Jared Gray, NC DOT
Tim Bassette, NC DOT
Jackie Wagner, ASU

Survey Date 2012-03-15

Last Observation Date 2012-03-15 **First Observation Date** 1998-2000

EO Data J. Wagner et al. observed 50-100 plants on 15 March 2012. Plants in two subpopulations about 100 m apart. Heavily impacted by invasives on southeast facing slope. Hexastylis minor also present (Wagner 2012). 3,572 plants counted at 4 locations by NCDOT biologists on 27 April 2007 (site 34) and 10 April 2007 (sites 32, 33, and 35) (Bassette 2009). 3,522 in 5 groups (sites) over 5.8 acres (Bassette 2003, NCDOT 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 3,572 in 4 groups (2006/2007). 3,592 in 5 groups (sites) (Bassette et al. 2000).

Landscape Context "Site 32 [EO 208, in part] sits along the hardwood forest stream bank and slopes of three extremely incised intermittent tributaries to Potts Creek (Bassette et al. 2003)." EO is bisected by a powerline (Wichmann 2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2007-04-27

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description EO is bisected by a powerline (Wichmann 2005). "Site 32 [EO 208, in part] sits along the hardwood forest stream bank and slopes of three extremely incised intermittent tributaries to Potts Creek...Site 34 [EO 208, in part] is a high quality site with no invasive species, Site 36 [EO 208, in part] is a hgih quality site despites size, lots of invasive kudzu located adjacent to (but not in or ajoining) site (Bassette 2003)."

Min. Elevation	700.00	**feet**	213.36	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area	5.76	**acres**	2.33	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009). This EO will be impacted by the proposed Shelby Bypass, see U03BAS01NCUS (Wichmann 2005).

MA/Ownership

Element Occurrence Report

EO ID 22219 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61408

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Private	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "The proposed relocation of SR 2245 (Bethlehem Road) [for proposed Shelby Bypass] will perpendicularly cross Site 32 [EO 208, in part], thereby impacting 83 plants over 0.18 ac from construction activies...the remaining parts of Site 32 not impacted by direct construction activities will be protected by interrelated and interdependent on-site conservation actions. According to the Cleveland County projected land use plan, the area around exising US 74 near site 32 is expected to undergo commercial and industrial develpoment beyond 2005...NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. However, if this is not possible portions of these sites may incur indirect effects...According to the Cleveland County projected land use plan, the area around exisiting US 74 near sites 33, 34, and 35 is expected to undergo commercial and industrial development beyond 2005...Site 36 [EO 208, in part] will be directly impacted by construction activities (Bassette 2003)."

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	9/30/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/16/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:10:29AM

Element Occurrence Report

EO ID 22219 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61408

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050803
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	13.6764597586
Hectares	5.53467544508
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
MAPSHEET	40486 - 35081-B4
COUNTY	1839 - NCCLEV
PARENT_EO_ID	19714

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 4:28:12PM
Last Modified By	LGR	**Last Modified Date**	10/1/2015 4:22:32PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61402

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 207 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Tributary south of I-74 & east of Creek, BYP site 48

NCDOT TIP: R-2707

Directions

Buffalo Creek: Triburary south of I-74 and east of Buffalo Creek, proposed Shelby Bypass Site 42. Located west of SR 2245 and north of SR 2243 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B4	Grover			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61402

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This EO was not linked with EO 208 because the two are separated by a major highway (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29626	2000; NCDOT	Buffalo Creek: Trib	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2000

Surveyor

Survevor

Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation Personnel

Survey Date 2000

Last Observation Date 2000 **First Observation Date** 1988-2000

EO Data Tim Bassett et al observed 346 clumps over 0.4696 acres in 2000 (Bassette et al. 2000).

Element Occurrence Report

EO ID 22218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61402

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 346 clumps over 0.4696 acres (Bassette et al. 2000).
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2000
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	720.00	**feet**	219.46	**meters**
Max. Elevation	790.00	**feet**	240.79	**meters**
Observed Area	0.47	**acres**	0.19	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Near the proposed Shelby Bypass but not expected to be impacted, see U03BAS01NCUS (Wichmann 2005).
Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22218 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61402

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	12/11/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/16/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:10:05AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.76754376509
Hectares	1.11998695498
WATERSHED	194 - 03050105
MAPSHEET	40486 - 35081-B4
COUNTY	1839 - NCCLEV
PARENT_EO_ID	19714

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 4:16:43PM
Last Modified By	LGR	**Last Modified Date**	12/11/2015 2:26:19PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61400

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 206 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Ravine N of Creek and SW of I-74, BYP Sites 44, 45, 46, and 47
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek:Ravine north of Buffalo Creek and southwest of I-74, Proposed Shelby Bypass Sites 44, 45, 46, and 47 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61400

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This EO was not linked with sub EO 204 (and principal EO 214) because I-74 is considered a major highway and separation barrier (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29624	2003, Bassette	Buffalo Creek: Rav	Line	Estimated	50.00	Meters		1:24,000 topos (di
29625	2003, Bassette	Buffalo Creek: Rav	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor
Tim Bassette, NCDOT

Element Occurrence Report

EO ID 22217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61400

Survey Date 2007-04-10
Last Observation Date 2007-04-10 **First Observation Date** 2003
EO Data 90 plants total at all sites county by NCDOT biologists on 28 April 2006 (site 44, 45, 46) and 10 April 2007 (site 47) (Bassette 2009). 27 clumps over 0.02 ac observed by NCDOT biologists in 2003 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 90 plants (2006/2007). 27 clumps (2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2007-04-10
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Near the proposed Shelby Bypass but not expected to be impacted, see U03BAS01NCUS (Wichmann 2005).
Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Element Occurrence Report

EO ID 22217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61400

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/27/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/12/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:12:49AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
PARENT_EO_ID	19714
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
Acreage	4.2852839509
Hectares	1.734195565
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61400

Record Create User	BLW	**Record Create Date**	9/12/2005 4:12:50PM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 1:28:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61397

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 205 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: North of SR 2128/Johnson Rd, BYP Site 30 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek: North of SR 2128 (Johnson Road), proposed Shelby Bypass Site 30. This is a sub EO of Parent EO 214 (Wichmann 2005). "Site 30 [EO 205] sits along the densely wooded banks associated with a pond on the northern side of SR 2128 (Johnson Road)" (Bassette 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61397

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29620	2000; NCDOT	Shelby Bypass Site	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor
Tim Bassette, NC DOT
Jennifer Harrison, NC DOT

Element Occurrence Report

EO ID 22216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61397

Survey Date 2000-10-03
Last Observation Date 2000-10-03 **First Observation Date** 2000
EO Data 2000: 184 plants over 0.28 acres (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 184 plants over 0.28 acres (Bassette 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2000-10-03
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Densely wooded banks associated with a pond on the northern side of road (Bassette 2003).
Min. Elevation 700.00 **feet** 213.36 **meters**
Max. Elevation 800.00 **feet** 243.84 **meters**
Observed Area 0.28 **acres** 0.11 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "The proposed US 74 [Shelby] Bypass will impact 13 plants and 0.02 ac by clipping the site's western tip during construction activities" (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Element Occurrence Report

EO ID 22216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61397

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/3/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	7/22/2014 3:03:28PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.18306639514
Hectares	0.88345699
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
PARENT_EO_ID	19714
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22216 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61397

Record Create User	BLW	**Record Create Date**	9/12/2005 4:09:10PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:53:07AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61396

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 204 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: S of SR 2128/Johnson Rd, proposed Shelby Bypass site 31 (Sub EO of EO 214).
NCDOT TIP: R-2707

Directions

Buffalo Creek: South of SR 2128 (Johnson Road), proposed Shelby Bypass Site 31. This is a sub EO of Parent EO 214 (Wichmann 2005).

Locators

Latitude Not processed per ag **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61396

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29622	2000; NCDOT	Shelby Bypass Site	Polygon	Delimited				1998 aerial photos
29623	2000; NCDOT	Shelby Bypass site	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Surveyor
Tim Bassette, NC DOT
Jennifer Harrison, NC DOT

Element Occurrence Report

EO ID 22215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61396

Survey Date 2000-10-03
Last Observation Date 2000-10-03 **First Observation Date** 2000
EO Data 2000: Total of 3,094 plants: 2,562 over 1.94 acres at site 31 and 532 at site 43 (Bassette 2003).
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 2,562 at site 31 over 1.94 acres; 532 at site 43 (Bassette 2003).
Landscape Context

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**
EO Rank Date 2000-10-03
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description "Covering the majority of an entire hillside, Site 31 [EO 204, in part] is situated along an unnamed intermittent tributary to Buffalo Creek...The steep, heavily forested site is the highest quality DFHL site along the entire project [proposed US 74 (Shelby) Bypass despite a large clear-cut area located along its western end" (Bassette 2003).

Min. Elevation	650.00	**feet**	198.12	**meters**
Max. Elevation	800.00	**feet**	243.84	**meters**
Observed Area	2.00	**acres**	0.81	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 22215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61396

Additonal Topics "...Construction activities associated with the Bypass exit/entrance ramps will impact the entire site...NCDOT proposes to protect Site 43 [EO 204, in part] through a conservation easement. However, if it is not possible to obtain a conservation easement, the entire site may incur indirect effects relating to the construction of the entrance and exit ramps associated with the existing US 74/proposed US 74 Bypass' eastern interchange. The site's existing land use is undeveloped. The City of Shelby's land development plan calls for low-density residential development in this area which may result in loss of Sire 43 [EO 204, in part]" (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/3/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:12:07AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22215 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61396

Spatial Attributes

Attribute Name	Attribute Value
PARENT_EO_ID	19714
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	3.92535140092
Hectares	1.58853580499
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 4:08:22PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:52:50AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61391

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 203 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: 3rd Tributary S of SR 2947, BYP Sites 28 and 29 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek: 3rd Tributary south of SR 2947, Shelby Bypass Sites 28 and 29. This is a sub EO of Parent EO 214 (Wichmann 2005). "Site 28 [EO 203, in part] is located just north of where the proposed US 74 Bypass breaks off from the existing US 74 Bypass, along the steep, wooded slopes of an unnamed tributary to Buffalo Creek" (Bassette 2003).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61391

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29619	2000; NCDOT	Shelby Bypass Sites	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2000

Surveyor

Survevor
Tim Bassette, NC DOT
Jennifer Harrison, NC DOT

Element Occurrence Report

EO ID 22214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61391

Survey Date 2007-04-10
Last Observation Date 2007-04-10 **First Observation Date** 2000
EO Data 2007: 278 plants total observed by NCDOT biologists on 27 April 2006 (site 28) and 10 April 2007 (site 29) (Bassette 2009).
2000: Total of 247 plants at two sites over 1.16 ac observed by NCDOT biologists on 03 October 2000 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 278 plants (2008/2009). 247 plants over 1.16 ac (Bassette 2003).
Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2007-04-10
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Wooded slopes of an unnamed tributary to Buffalo Creek (Bassette 2003).
Min. Elevation 650.00 **feet** 198.12 **meters**
Max. Elevation 710.00 **feet** 216.41 **meters**
Observed Area 1.16 **acres** 0.47 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 22214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61391

Additonal Topics "Construction activities [associated with the proposed Shelby Bypass] will impact 0.59 ac of the total 1.11 ac site [EO 203, in part], and 110 of the site's 206 DFHL plants....Site 29 [EO 203, in part] appears to be undeveloped and just outside of the City of Shelby's land development plan. This site is not expected to incur direct or cumulative effects from induced development. However, because this site is situated within 400 ft of the mechanized clearing line, under a worst case scenario this entire site may experience indirect effects due to competition from invasive species" (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/3/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:10:56AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22214 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61391

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	1.13350640351
Hectares	0.458714475025
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV
PARENT_EO_ID	19714

Not processed per agreement with Plaintiff/Requester

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 3:58:46PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22213 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61388

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 202 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Ravine north of SR 2047, BYP site 24 (Sub EO of EO 214).
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Buffalo Creek: Ravine just north of SR 2047, Proposed Shelby Bypass Site 24. This is a sub EO of Parent EO 214 (Wichmann 2005). Just north of SR 2047 (Borders Road), site 24 [EO 202] sits along both sides of unnamed perennial tributary to Buffalo Creek (35 16' 45" / 81 28' 38") (Bassette et al. 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22213 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61388

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited Y

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29612	2000; NCDOT	Shelby Bypass Site	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Surveyor

Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Jill Holms, NC Dept. of Transportation
Dale Suiter, NC Dept. of Transportation

Element Occurrence Report

EO ID 22213 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61388

Survey Date 2000-10-25
Last Observation Date 2000-10-25 **First Observation Date** 1998-2000
EO Data 2000: 1,641 clumps over 3.6 acres (Bassette et al. 2000).
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 1,641 clumps over 3.6 acres (Bassette et al. 2000).
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**
EO Rank Date 2000-10-25
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Heavily wooded, perennial tributary to Buffalo Creek (Bassete et al. 2003).
Min. Elevation 720.00 **feet** 219.46 **meters**
Max. Elevation 840.00 **feet** 256.03 **meters**
Observed Area 3.60 **acres** 1.46 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "...the larget DFHL site within the project corridor, and contains the fourth highest number of plants. Construction activites [for the proposed Shelby bypass] will impact 14 DFHL plants over 0.03 ac of this site [EO 209]" (Bassette et al. 2003).
Topic Keywords

Keywords
IMPACTS
NC DOT

Element Occurrence Report

EO ID 22213 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61388

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/16/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 11:13:38AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050804
LONGITUDE_DD	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
Acreage	3.55163264077
Hectares	1.43729695505
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22213 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61388

Record Create User	BLW	**Record Create Date**	9/12/2005 3:54:15PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:52:13AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22210 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61383

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 201 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22237 **Parent EO Shape ID** 61,516.00 **Parent EO Number** 214

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Tributary S of SR 2047, BYP Sites 26 & 27 (Sub EO of EO 214)
NCDOT TIP: R-2707

Directions

Buffalo Creek: Tributary south of SR 2047, Shelby Bypass sites 26 and 27. This is a sub EO of Parent EO 214 (Wichmann 2005). "Site 27 [EO 201, in part] sits south of both SR 2047 (Borders Road) and site 25 [EO 213]. An unnamed intermittent tributary to Buffalo Creek adjoins the site" (Bassette 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22210 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61383

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29614	2000; NCDOT	Shelby Bypass site 1	Line	Estimated	50.00	Meters		1:24,000 topos (di
29615	2000; NCDOT	Shelby Bypass site 1	Point	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Element Occurrence Report

EO ID 22210 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61383

Surveyor

Surveyor

Tim Bassette, NC DOT
Matt Haney, NC DOT
Jill Holmes, NC DOT
Dale Suiter, NC DOT

Survey Date 2000-10-25

Last Observation Date 2000-10-25 **First Observation Date** 2000

EO Data 2000: Total of 78 plants in two groups over 0.23 acres (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 78 plants over 0.23 ac (Bassette 2003).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2000-10-25

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	700.00	**feet**	213.36	**meters**
Max. Elevation	820.00	**feet**	249.94	**meters**
Observed Area	0.23	**acres**	0.09	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 22210 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61383

Additonal Topics "The entire 0.011 ac site [EO 201, in part] with be impacted by project construction [proposed Shelby Bypass], eliminating 14 DFHL plants... NC DOT proposes to protect Site 26 [EO 201, in part] through a conservation easement. However, if it is not possible to obtain a conservation easement, this entire site, under worst case scenerio, may experience indirect effects. Site 26 is situated within 400 ft of the mechanized clearing line and may be adversely affected due to competition from invasive species and loss of shade" (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/13/2005 2:52:26PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22210 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61383

Spatial Attributes

Attribute Name	Attribute Value
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	2.696533
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40122 - 35081-C4
WATERSHED	194 - 03050105
ACREAGE	6.663253
HUC_12	030501050804
PARENT_EO_ID	19714
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 3:26:09PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:51:54AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22208 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61373

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 200 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22250 **Parent EO Shape ID** 61,687.00 **Parent EO Number** 216

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Kings Mountain Reservoir, Tributary N of SR 2033, BYP Sites 20 &21 (Sub EO of 216)
NCDOT TIP: R-2707

Directions

Buffalo Creek: Kings Mountain Reservoir, tributary north of SR 2033, NC DOT proposed Shelby Bypass Sites 20 &21. This is a Sub EO of Parent EO 216 (Wichmann 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22208 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61373

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29608	2000; NCDOT	Shelby Bypass sites	Line	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor

Tim Bassette, NC Dept. of Transportation
Jennifer Harrison, NC Dept. of Transportation

Element Occurrence Report

EO ID 22208 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61373

Survey Date 2000-04-10
Last Observation Date 2000-04-10 **First Observation Date** 2000-04-10
EO Data Total of 55 plants on 10 April 2000: 35 clumps over in two groups over 0.12 acres plus 20 plants in unflagged, cleared area halfway between the two groups (Bassette et. al 2000, NCDOT 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 35 clumps over 0.12 acres (Bassette et. al 2000)
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2000-04-10
EO Rank Comments EO Rank based on EO Rank Specs for this species and most recent EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Stream banks of an intermittent tributary to Kings Mountain Reservior; partially to completely cleared of hardwood trees; partially covered by downed vegetation from clearing activities (Bassette 2003).
Min. Elevation 850.00 **feet** 259.08 **meters**
Max. Elevation 900.00 **feet** 274.32 **meters**
Observed Area 0.12 **acres** 0.05 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "Of Site 20's [EO 200, in part] 16 DFHL plants over 0.12 ac, 0.004 ac fall within the construction limits. Construction will eliminate all DFHL plants over 0.022 ac of Site 21" (Bassette 2003).

Element Occurrence Report

EO ID 22208 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61373

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/23/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 3:07:34PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22208 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61373

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	4.63
HECTARES	1.8739
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40122 - 35081-C4
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
WATERSHED	194 - 03050105
HUC_12	030501050802
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 3:07:51PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:12:55PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61367

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 199 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22250 **Parent EO Shape ID** 61,687.00 **Parent EO Number** 216

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Kings Mountain Reservoir: tributary E of US 180, BYP Sites 15-19 (Sub of 216).
NCDOT TIP: R-2707

Directions

Buffalo Creek: Kings Mountain Reservoir, tributary east of US 180, Proposed Shelby Bypass Sites 15, 16, 17, 18, and 19. This is a sub EO of Parent EO 216 (Wichmann 2005). "Located east of NC 180 and north of SR 2067 (Fairview Road), Site 15 [EO 199, in part] is found along the stream banks of an unnamed intermittent tributary to Kings Mountain Reservoir" (Bassette 2003). "Sites 16, 17, and 18: Located east of NC 180, north of SR 2067 (Fairview Road), and south of DFHL Site 15, 16, 17, and 18 are found near each other in a heavily wooded area. None of the three sites is associated with or located near a stream (Bassette 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 22206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61367

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29603	2000; NCDOT	Shleby Bypass NCI	Polygon	Delimited				1998 aerial photos
29605	2000; NCDOT	Shelby Bypass site	Line	Estimated	50.00	Meters		1998 aerial photos
29606	2000; NCDOT	Shelby Bypass sites	Polygon	Delimited				1998 aerial photos
29607	2000; NCDOT	Shelby Bypass site	Point	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Element Occurrence Report

EO ID 22206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61367

Surveyor

Surveyor

Jared Gray, NC Dept. of Transportation
Tim Bassette, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation

Survey Date 2007-04

Last Observation Date 2007-04 **First Observation Date** 1998-2000

EO Data 432 plants total at all five sites counted by NCDOT biologists in April and May of 2006 and April 2007 (Bassetted 2009). Total of 409 plants: 408 clumps over 0.3 acres in 4 groups and one plant several feet outside of flagged area where the other groups occur in 2000 (Bassette et al. 2003, NCDOT 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 408 clumps over 0.303 in 4 groups (Bassette et al. 2003).

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2007-04

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description "Site 15 is found along the stream banks of an unnamed intermittent tributary to Kings Mountian Reservoir. Despite running pine (Lycopodium flabelliforme) and poison ivy as a prodominane ground cover, the quality of this site, relative to other DFHL sites on the project, is good" (Bassette 2003). "Sites 16, 17, and 18 are found near each other in a heavily wooded area. None of the three sites is associated with or located near a stream" (Bassette 2003).

Min. Elevation	790.00	**feet**	240.79	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area	0.30	**acres**	0.12	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009). Expected to be impacted by the Proposed Shelby Bypass (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Element Occurrence Report

EO ID 22206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61367

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "Site 15:...Approximately 67 DFHL plant and 0.4 ac of the 0.2 ac site fall under project's construction limits" (Bassette et. al 2003). "Sites 16, 17, and 18:...Site 16, which contains 13 DFHL plants over 0.053 ac, includes 0.03 ac of construction impacts to DFHL plants. Construction activities will eliminate all Sites 17 and 18, resulting in a loss of 4 plants over 0.001ac Site 17 and 54 plants over 0.049 ac at Site 18. Despite its size, Site 18 is a high quality site relative to other DFHL sites on the project" (Bassette et. al 2003).

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 8/22/2016 12:00:00AM

Transcribed By Wichmann **Transcription Date** 9/16/2005 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 9/23/2015 9:40:50AM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22206 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61367

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reques
LATITUDE_DD	Not processed per agreement with Plaintiff/Reques
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reques
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reques
UTM_EASTING	Not processed per agreement with Plaintiff/Reques
UTM_NORTHING	Not processed per agreement with Plaintiff/Reques
UTM_ZONE	Not processed per agreement with Plaintiff/Reques
Acreage	4.87666544699
Hectares	1.97351953501
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 2:58:29PM
Last Modified By	LGR	**Last Modified Date**	8/22/2016 5:04:40PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22205 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61364

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 198 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22250 **Parent EO Shape ID** 61,687.00 **Parent EO Number** 216

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Kings Mountain Reservoir, tributary S of SR 2086; BYP Site 14 (Sub of 216)
NCDOT TIP: R-2707

Directions

Buffalo Creek: Kings Mountain Reservoir, tributary south of SR 2068; NCDOT proposed Shelby Bypass Site 14. This is a sub EO of Parent EO 216 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22205 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61364

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29602	2000; NCDOT	Shelby Bypass site	Point	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor
Tim Bassette, NC Dept. of Transportation
Dept. of Transportation Personnel

Element Occurrence Report

EO ID 22205 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61364

Survey Date 2007-04-10
Last Observation Date 2007-04-10 **First Observation Date** 1998-2000
EO Data 450 plants counted by NCDOT biologists on 10 April 2007 (Bassette 2009). Total of 177 clumps: 87 clumps over 0.1 acres within project corridor and 90 plants in area adjoining site but outside of project corridor in 2000 (Bassette et. al 2000, NCDOT 2008).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 450 plants (2007). 87 clumps over 0.1 acres (Bassette et. al 2000).
Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**
EO Rank Date 2007-04-10
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	790.00	**feet**	240.79	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area	0.10	**acres**	0.04	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "According to the City of Shelby's existing land use plan, Site 12 sits in an undeveloped tract of land. The City's land development plant proposes low-density residential development on this land parcel. Consequently, private development resulting in the loss of Site 23 would be considered a cumulative effect" (Bassette et. al 2003).

Element Occurrence Report

EO ID 22205 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61364

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/23/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/16/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 2:51:20PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	1.930915
HECTARES	0.781417
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
MAPSHEET	40122 - 35081-C4
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
WATERSHED	194 - 03050105
HUC_12	030501050802
COUNTY	1839 - NCCLEV

Element Occurrence Report

EO ID 22205 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61364

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 2:51:38PM
Last Modified By	JLA	**Last Modified Date**	10/19/2015 11:19:12AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22204 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61362

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 197 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22250 **Parent EO Shape ID** 61,687.00 **Parent EO Number** 216

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Buffalo Creek: Kings Mountain Reservoir, tributary N of SR 2068, BYP Site 13 (Sub EO of 216).
NCDOT TIP: R-2707

Directions

Buffalo Creek: Kings Mountain Reservoir, tributary north of SR 2068. NC DOT proposed Shelby Bypass Site 13. This is a sub EO of Parent EO 216 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22204 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61362

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29601	2000-11; Bassette &	Buffalo Creek: King	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Surveyor

Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation personnel

Element Occurrence Report

EO ID 22204 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61362

Survey Date 2000-11-01
Last Observation Date 2000-11-01 **First Observation Date** 1998-2000
EO Data 2,067 clumps (Bassette et al. 2000).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 2,067 clumps (Bassette et al. 2000).
Landscape Context "High quality site" (Bassette 2003).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2000-11-01
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description "High quality site" (Bassette 2003).
Min. Elevation 790.00 **feet** 240.79 **meters**
Max. Elevation 840.00 **feet** 256.03 **meters**
Observed Area 2.78 **acres** 1.13 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments NC DOT plans "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement; if not; presumed to fall entirely under indirect effects of the proposed Shelby Bypass" (Bassette et al. 2003).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement. However, if it is not possible to obtain a conservation easement, development as a result of the interchange is assumed to impact the site. Because Site 13 [EO 197] sits within approximately 1,200 ft from the proposed Shelby Bypass's interchange with NC 180 and NC 150 (Cherryville Road), this site is presumed to fall entirely under indirect effects" (Bassette 2003).

Element Occurrence Report

EO ID 22204 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61362

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/23/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/23/2015 9:37:20AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	
UTM_ZONE	
Acreage	1.43355965442
Hectares	0.580141905029
WATERSHED	194 - 03050105
HUC_12	030501050802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22204 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61362

Record Create User	BLW	**Record Create Date**	9/12/2005 2:17:47PM
Last Modified By	JLA	**Last Modified Date**	10/19/2015 11:18:05AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22203 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61360

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 196 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22250 **Parent EO Shape ID** 61,687.00 **Parent EO Number** 216

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: Friendship Chapel and tributary to Catawba River (Sub of 216)
NCDOT TIP: R-2707

Directions

Buffalo Creek: Friendship Chapel and unnamed tributary to Buffalo Creek, located south-west of Friendship Chapel and south of SR 1926; NC DOT Proposed Shelby Bypass Sites 41 and 42. This is a sub EO of Parent EO 216 (Wichmann 2005). "Hwy 150 to Airport Road. Go N/NW on Airport Road to the railroad track. Walk west on the tracks about 200 yards and then head right to the stream, [plants] located on the west bank of the stream" (Lespinasse 2004).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22203 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61360

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide. See map for details. Separated from sub EO 197 of Parent EO 216 by more then 2.0 kilometers when measured along suitable habitat (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29600	2004; NCDOT	Sites 41 and 42, unr	Line	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2001

Element Occurrence Report

EO ID 22203 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61360

Surveyor

Surveyor

Polly Lespinasse, NC DWQ
Alan Johnson, NC DWQ
Tim Bassette, NC DOT
Jared Gray, NC DOT
Matt Haney, NC DOT

Survey Date 2006-04-29

Last Observation Date 2006-04-29 **First Observation Date** 1998-2000

EO Data 2006: 56 plants counted by NCDOT biologists on 29 April 2006 (Bassette 2009).
2004: Undetermined number of clumps observed during stream determination, October 2004 (Lespinasse 2004).[not same location as NCDOT]
2001: 55 clumps over 0.114 ac observed by NCDOT biologists on 09 April 2001 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 56 plants (2006). 55 clumps over 0.114 ac (Bassette 2003).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2006-04-29

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Dry woodlands with nearly closed canopy at mid slope (Lespinasse 2004). Site 41 [EO 196, in part]: somewhat open canopy, with moderate understory; Site 42 [EO 196, in part]: stressed, poor site with dense herbaceouse growth and moderate canopy (Bassette 2003).

Min. Elevation	820.00	**feet**	249.94	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	0.11	**acres**	0.05	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Element Occurrence Report

EO ID 22203 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61360

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments "A portion of the site is owned by CSX and is used for coal transfer to power plants" (Lespinasse 2004).

OwnerInfo_BCD N

Additional Topics

General Comments The location described by Lespinasse in 2004 does not appear to be the same as the location reported by NCDOT. Based on her vague directions and Topozone map location, it was in the small draw to the east as seen in the USGS topo map (Amoroso 2015).

Additonal Topics Sites 41 and 42 [EO 196] will not have indirect or cumulative effects associated with the proposed Shelby Bypass (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
F04CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/19/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/4/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/16/2015 11:08:20AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 22203 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61360

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	5.31208426243
Hectares	2.14972755
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 2:14:24PM
Last Modified By	JTF	**Last Modified Date**	10/21/2015 11:11:10PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22202 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61358

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 195 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: Hickory Creek, unnamed tributary SE of HWY 18
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

First Broad River: Hickory Creek, unnamed tributary southeast of highway 18; NC DOT Proposed Shelby Bypass Site 040 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22202 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61358

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29599	2001-04-10; NCDOFirst Broad River: H		Point	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2001

Surveyor

Surveyor
Tim Bassette, NC DOT
Jared Gray, NC DOT
Matt Haney, NC DOT

Element Occurrence Report

EO ID 22202 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61358

Survey Date 2006-04-06
Last Observation Date 2006-04-06 **First Observation Date** 2001-04-10
EO Data 22 plants counted by NCDOT biologists on 06 April 2006 (Bassette 2009). 14 clumps over 0.015 ac observed by NCDOT biologists on 10 April 2001 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 22 plants (2006). 14 clumps over 0.015 ac (Bassette 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2006-04-06
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Relatively open canopy, and open understory, in a side yard of residential area (Bassette 2003).
Min. Elevation 280.00 **feet** 85.34 **meters**
Max. Elevation 320.00 **feet** 97.54 **meters**
Observed Area 0.02 **acres** 0.01 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "Site 40 [EO 195] will not have indirect of cumulative effects associated with the proposed Shelby Bypass (Bassette 2003).
Topic Keywords

Keywords
IMPACTS
NC DOT

Element Occurrence Report

EO ID 22202 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61358

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 12/11/2015 12:00:00AM
Transcribed By Wichmann **Transcription Date** 10/4/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By BLW **Digital Mapping Date** 9/12/2005 2:11:27PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	1.930915
HECTARES	0.781417
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
MAPSHEET	40121 - 35081-C5
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
WATERSHED	194 - 03050105
HUC_12	030501050703
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22202 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61358

Record Create User	BLW	**Record Create Date**	9/12/2005 2:11:28PM
Last Modified By	LGR	**Last Modified Date**	12/11/2015 2:13:49PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22201 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61355

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 194 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22234 **Parent EO Shape ID** 61,473.00 **Parent EO Number** 211

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: unnamed tributary, Shelby Bypass Sites 10, 11, & 12 (Sub EO of EO 211)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

First Broad River: unnamed tributary, Shelby Bypass sites 10, 11, and 12. This is a sub EO of Parent EO 211 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22201 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61355

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29598	2001; NCDOT	First Broad River: u	Line	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Element Occurrence Report

EO ID 22201 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61355

Surveyor

Surveyor

Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Mary Fraser, NC Dept. of Transportation
Shannon Simpson, NC Dept. of Transportation

Survey Date 2000-11-01

Last Observation Date 2000-11-01 **First Observation Date** 2000-10-30

EO Data 2014: NCDOT biologists observed plants (no count given) (NCDOT 2015)
2000: 1,965 clumps over 3.0 acres (Bassette et al. 2000).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 1,965 clumps over 3.0 acres (Bassette et al. 2000).

Landscape Context High quality site, no invasive species; stream banks (Bassette et al. 2000).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2000-11-01

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description High quality site, no invasive species; along the stream banks of an unnamed perennial tributary to First Broad River, in hardwood forest between the residential/farming areas (Bassette et al. 2000).

Min. Elevation	780.00	**feet**	237.74	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area	0.60	**acres**	0.24	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009). "NCDOT proposes to obtain a conservation easment to protect Site 12 [EO 194]" (Bassette et al. 2003).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Element Occurrence Report

EO ID 22201 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61355

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "The City of Shelby's existing land use plan dipicts this site as part of an undeveloped tract of land. The city's land development plan calls for commercial development at Site 12 [EO 194]. Consequently, the remaining portion of Site 12 [EO 194] will have cumulative impacts associated with the proposed Shelby Bypass. Shelby's future planned growth is assumed to cumulatively impact the rest of Site 12 [EO 194] not already impacted by indirect impacts. However, NCDOT proposes to obtain a conservation easement to protect Site 12 [EO 194]. Also note that portions of Site 10 [EO 194] and Site 11 [EO 194] not impacted by direct construction activities are presumed to be protected by interrelated and interdependent on-site conservation actions" (Bassette 2003). "...Road construction activities will impact 55 DFHL plants and 0.09 ac of the 365 DFHL plants found at the 0.6 ac Site 10. Site 11 will lose 3 plants and 0.01 ac from direct contruction activities" (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
F15DOT03NCUS	N.C. Department of Transportation Division 10. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	3/23/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/13/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 2:07:04PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Element Occurrence Report

EO ID 22201 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61355

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	9.67
HECTARES	3.9132
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
MAPSHEET	40121 - 35081-C5
UTM_EASTING	Not processed per agreement with Plaintiff/Reques
UTM_NORTHING	Not processed per agreement with Plaintiff/Reques
UTM_ZONE	Not processed per agreement with Plaintiff/Reques
WATERSHED	194 - 03050105
HUC_12	030501050702
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User BLW **Record Create Date** 9/12/2005 2:07:07PM

Last Modified By JTF **Last Modified Date** 10/11/2016 6:18:54PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 22200 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61351

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 193 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22256 **Parent EO Shape ID** 61,762.00 **Parent EO Number** 217

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Brushy Creek, Ridge southwest of creek, near NC 226, BYP site 9 (Sub EO of 217)
NCDOT TIP: R-2707

Directions

Broad River: Brushy Creek, Ridge southwest of creek near NC 226, Proposed Shelby Bypass Site 9 This is a sub EO of principal EO 217 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22200 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61351

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29597	2000; NCDOT	Brushy Creek, Ridg	Line	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor
Tim Bassette, NC DOT
NC DOT personnel

Element Occurrence Report

EO ID 22200 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61351

Survey Date 2000-10
Last Observation Date 2000-10 **First Observation Date** 1998-2000
EO Data 271 plant seen over 0.3 acres by Bassette et al, October 2000 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 271 plant seen over 0.3 acres by Bassette et al, October 2000 (Bassette 2003).
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2000-10
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	750.00	**feet**	228.60	**meters**
Max. Elevation	810.00	**feet**	246.89	**meters**
Observed Area	0.30	**acres**	0.12	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "NC DOT proposes to protect Site 9 through a conservation easement. However, if it is not possible to obtain a conservation easement, development as a result of the interchange is assumed to imact this site. The entire site falls under and indirect effect because of its close proximity to the proposed Shelby Bypass interchange with NC 226 (Polkville Road)" (Bassette 2003).

Element Occurrence Report

EO ID 22200 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61351

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/2/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/17/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 2:02:28PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	1.5116
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ...
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ...
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ...
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ...
MAPSHEET	40121 - 35081-C5
UTM_EASTING	Not processed per agreement with Plaintiff/Requests
UTM_NORTHING	Not processed per agreement with Plaintiff/Requests
UTM_ZONE	Not processed per agreement with Plaintiff/Requests
WATERSHED	194 - 03050105
ACREAGE	3.74
HUC_12	030501050701
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22200 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61351

Record Create User	BLW	**Record Create Date**	9/12/2005 2:02:31PM
Last Modified By	JLA	**Last Modified Date**	10/2/2015 1:19:06PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61349

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 192 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22256 **Parent EO Shape ID** 61,762.00 **Parent EO Number** 217

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Brushy Creek, Ridge south of Creek, BYP Site 8 (Sub EO of EO 217)
NCDOT TIP: R-2707

Directions

Broad River: Brushy Creek, Ridge south of Creek, Proposed Shelby Bypass Site 8. This is a sub EO of Parent EO 217 (Wichmann 2005).

Locators

Latitude Not processed per ag **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61349

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29596	2000; NCDOT	Brushy Creek, Ridg	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor

Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Tim Bassette, NC Dept. of Transportation

Element Occurrence Report

EO ID 22199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61349

Survey Date 2000-10-27
Last Observation Date 2000-10-27 **First Observation Date** 1998-2000
EO Data 311 clumps over 0.4 acres counted by Bassette et al. on 27 October 2000 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 311 clumps over 0.4 acres counted by Bassette et al. on 27 October 2000 (Bassette 2003).
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2000-10-27
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description High quality site, no invasive species (Bassette 2003).
Min. Elevation 750.00 **feet** 228.60 **meters**
Max. Elevation 810.00 **feet** 246.89 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments "NCDOT proposes to protect Site 8 [EO 192] through a conservation easement" (Bassette 2003).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		Y - Yes	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. However, if it is not possible to obtain a conservarion easement, development as a result of the interchange is assumed to impact this site. The entire site falls under an indirect effect because of its close proximity to the proposed Shelby Bypass interchage with NC 226 (Polkville Road)" (Bassette 2003).

Element Occurrence Report

EO ID 22199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61349

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/2/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/17/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/2/2015 11:06:09AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreeme Not processed per agreeme

Spatial Attributes

Attribute Name	Attribute Value
LONGITUDE_DD	Not processed per agreement with Plaintiff/R Not processed per agreement with Plaintiff/R
HUC_12	030501050701
LATITUDE_DD	Not processed per agreement with Plaintiff/Reque
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reque
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reque
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
Acreage	0.328355286178
Hectares	0.132880875004
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22199 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61349

Record Create User	BLW	**Record Create Date**	9/12/2005 11:44:09AM
Last Modified By	JLA	**Last Modified Date**	10/28/2015 9:43:32AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61347

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 191 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22256 **Parent EO Shape ID** 61,762.00 **Parent EO Number** 217

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Brushy Creek, Tributary north of SR 1308, BYP Sites 5,6,&7 (Sub EO of EO 217)
NCDOT TIP: R-2707
NCDOT TIP: R-2824

Directions

Broad River: Brushy Creek, tributary north of SR 1308, Shelby Bypass Sites 5, 6, and 7. This is a Sub EO of Principal EO 217 (Wichmann 2005). Located north of SR 1314 [SR 1308] and the CSX railroad tracks in a clear cut areas; Lat./Long.: Site 6: 35 18 51/ 81 32 49; Site 7: 35 18 54/ 81 35 23 (Bassette 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61347

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29595	2000; NCDOT	Brushy Creek, tribu	Line	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2000

Element Occurrence Report

EO ID 22198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61347

Surveyor

Surveyor

Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Mike Sanderson, NC Dept. of Transportation
Jennifer Morris, NC Dept. of Transportation

Survey Date 2013-06-03

Last Observation Date 2014 **First Observation Date** 1998-2000

EO Data 2014:NCDOT biologists observed plants (no specific population data given) (NCDOT 2015).
2013: The number of plants totaled 283 within the entire site prior to project construction. Of this total, the portion of the site west of the stream contains 193 plants, while the remaining 90 plants are found on the part of the site east of the stream. (Bassette 2015).
2000: Approximately 157 clumps over 0.4 acres counted by Bassette et al. on 27 October 2000 (Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Approximately 157 clumps over 0.4 acres counted by Bassette et al on 27 October 2000 (Bassette 2003).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2000-10-27

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Unnamed intermittent tributary to Brushy Creek, in clear-cut areas ovegrown with Japanese honeysuckle; low quality site (Bassette 2003).

Min. Elevation	770.00	**feet**	234.70	**meters**
Max. Elevation	820.00	**feet**	249.94	**meters**
Observed Area	0.40	**acres**	0.16	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Pending NCDOT purchase for right-of-way protection, as of May 2009 (Bassette 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management

Element Occurrence Report

EO ID 22198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61347

Management Comments As part of its conservation measures to offset the loss of Hexastylis naniflora plants in occupied habitat along TIP No. R-2707 (US 74 Shelby Bypass), the NC Department of Transportation acquired right-of-way to preserve in perpetuity H. naniflora specimens at Site 7 that will remain intact after incurring adverse direct and/or indirect (drainage) effects associated with construction of the Bypass project. This right-of-way that is protected in perpetuity also contains a protective buffer around the limits of the preserved occupied habitat of H. naniflora in order to minimize the potential adverse effects that may otherwise harm the protected site in the future.

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC Department of Transportation	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "Site 5: Indirect effects from invasive species, under a worst-case scenario, may impact this site in its entirety. However, whatever portion of this site is not ultimately impacted by indirects effects fall under cumulative effects as a result of the Wal-Mart facility proposed just east of the site south of the proposed Shelby Bypass" (Bassette 2003). Sites 6 and 7:...All 0.0001 ac of Site 6 fall under the projects; construction limits, resulting in a loss of five DFHL plants. Road construction activities will also impact 0.03 ac and 11 DFHL plants at the 0.4 ac Site 7" (Bassette 2003).

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT01NCUS	Haney, Matt. 2015. 2013 Hexastylis naniflora (Dwarf-Flowered Heartleaf) Portion of Element Occurrence No. 191: Site 7 Inventory and Monitoring Report US 74 Shelby Bypass (TIP R-2707) Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N
F15DOT03NCUS	N.C. Department of Transportation Division 10. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/14/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/19/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 11:40:15AM

Element Occurrence Report

EO ID 22198 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61347

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	3.8088
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40121 - 35081-C5
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
WATERSHED	194 - 03050105
ACREAGE	9.41
HUC_12	030501050701
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 11:40:17AM
Last Modified By	JTF	**Last Modified Date**	10/11/2016 6:18:53PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22197 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61343

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 190 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22256 **Parent EO Shape ID** 61,762.00 **Parent EO Number** 217

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Brushy Creek,Tributary just north of CSX rail line, BYP Site 4 (Sub EO of EO 217).
NCDOT TIP: R-2824
NCDOT TIP: R-2707

Directions

Broad River: Brushy Creek, tributary just north of CSX rail line. This is a sub EO of Parent EO 217 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22197 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61343

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29594	2000; NCDOT	Broad River: Brush	Line	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Survevor

Tim Bassette, NC Dept. of Transportation
Jared Gray, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
Jill Homes, NC Dept. of Transportation

Element Occurrence Report

EO ID 22197 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61343

Survey Date 2006-04-07
Last Observation Date 2000-10-27 **First Observation Date** 2000-10-27
EO Data No plants located during surveys by NCDOT biologists on 07 April 2006 (Bassette 2009). 3 clumps (Bassette et al. 2000).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO No plants (2006). 3 clumps (Bassette et al. 2000).
Landscape Context Low quality site (Bassette et al. 2000).

EO Rank F - Failed to find **EO Origin Subrank**

EO Rank Date 2006-04-06
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Low quality site, cutover area (including along stream bank), overgrown with blackberry and invasive Japanese honeysuckle; narrow (400 ft wide) strip of land between the footprint of the proposed US 74 Bypass and the CSX rail line (Bassette 2003).

Min. Elevation	800.00	**feet**	243.84	**meters**
Max. Elevation	830.00	**feet**	252.98	**meters**
Observed Area	0.00	**acres**	0.00	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 22197 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61343

Additonal Topics "Site 4 [EO 190] sits within industrial land use zones. Neither indirect effects due to induced development nor cumulative effects are predicted for this site because it is situated in a narrow (400 ft wide) strip of land between the footprint of the proposed US 74 Bypass and CSX rail line. Access into this piece of land will be limited due to the proposed Bypass and existing rail line. However, because this site is situated within 400 ft of the mechanized clearing line, under worst case scenario this entire site may have indirect effects due to competition from invasive species" (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/2/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	9/12/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 11:30:58AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate 3[redacted] **Y Coordinate** [redacted]

Element Occurrence Report

EO ID 22197 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61343

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Reques
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reques
HECTARES	1.0975
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reques
UTM_ZONE	Not processed per agreement with Plaintiff/Reques
LATITUDE_DD	Not processed per agreement with Plaintiff/Reques
UTM_NORTHING	Not processed per agreement with Plaintiff/Reques
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reques
MAPSHEET	40121 - 35081-C5
ACREAGE	2.71
HUC_12	030501050701

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 11:35:50AM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 12:59:31PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22196 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61340

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 189 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 36095 **Parent EO Shape ID** 159,555.00 **Parent EO Number** 307

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

First Broad River: Beaverdam Creek, ravine to unnamed tributary S of SR 1314 & W of SR 1313, BYP site 39

NCDOT TIP: R-2824

NCDOT TIP: R-2707

Directions

First Broad River: Beaverdam Creek. Ravine to unnamed tributary located south of SR 1314 and west of SR 1313, Proposed Shelby Bypass Site 39 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22196 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61340

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Suitable habitat between this EO and EO 036 should be searched for additional occurrences.

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29592	2000; Bassett	First Broad River: E	Point	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
Tim Bassette, NC DOT

Survey Date 2006-04-06

Last Observation Date 2006-04-06 **First Observation Date** 2000

EO Data 1 clump found by NCDOT biologists at site 39 on 06 April 2006 (Bassette 2009). 3 clumps over 0.003 acres observed by NCDOT biologists on 10 April 2001 (Bassette 2003).

Element Occurrence Report

EO ID 22196 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61340

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 1 clump (2006). 3 clumps over 0.003 acres (Bassette 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2006-04-06
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Poor, stressed site, thick canopy with little herbaceous vegetation...this area also lies with Shelby's 1313/Norfolk Southern-CSX tail line industrial center. The City of Shelby projects that land use around site 39 [EO 189] will change from undeveloped to industrial development (Bassette 2003).

Min. Elevation	850.00	**feet**	259.08	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	0.00	**acres**	0.00	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Indirect effects related to proposed Shelby Bypass expected due to projected industrial development of land (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 22196 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61340

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	BLW	**Transcription Date**	9/12/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 11:33:30AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	0.781417
LATITUDE_DD	Not processed per agreement with Plaintiff/Re
LATITUDE_DMS	Not processed per agreement with Plaintiff/Re
LONGITUDE_DD	Not processed per agreement with Plaintiff/Re
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Re
MAPSHEET	40121 - 35081-C5
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
WATERSHED	194 - 03050105
ACREAGE	1.930915
HUC_12	030501050704
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 11:33:46AM
Last Modified By	LGR	**Last Modified Date**	10/14/2015 4:40:21PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22195 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61338

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 188 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 36095 **Parent EO Shape ID** 159,555.00 **Parent EO Number** 307

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

First Broad River: Beaverdam Creek, Tributary N of SR 1316 and W of SR 1315 (Plato Lee Road), BYP sites 1,2,&3
NCDOT TIP: R-2707

Directions

First Broad River, Beaverdam Creek, Tributary north of SR 1316 and west of SR 1315 (Plato Lee Road), Proposed Shelby Bypass Sites 1, 2, and 3 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			
35081-C6	Boiling Springs North			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22195 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61338

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Suitable habitat between this EO and EO 187 should be searched for additional occurrences, discovery could create a sub-principal relationship (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29632	1998, NCDOT	First Broad River, E	Line	Estimated	25.00	Meters		1:24,000 topos (di
29633	1998, NCDOT	First Broad River, E	Line	Estimated	50.00	Meters		1:24,000 topos (di
29634	1998, NCDOT	First Broad River, E	Line	Estimated	25.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2000

Surveyor

Surveyor
Jennifer Harrison, NC DOT
Tim Bassette, NC DOT

Element Occurrence Report

EO ID 22195 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61338

Survey Date 2000-10-26
Last Observation Date 2000-10-26 **First Observation Date** 1998-2000
EO Data 327 individuals in 3 groups (sites) over 0.763 ac (Bassette 2003, NCDOT 2008)

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 894 individuals in 3 groups (sites) over 0.763 ac (Bassette 2003)
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**
EO Rank Date 2000-10-26
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Site 3 [EO 188, in part] is a cow pasture and highly eroded stream banks, Hexastylis plants are highly trampled, cow waste common (Bassette 2003).
Min. Elevation 790.00 **feet** 240.79 **meters**
Max. Elevation 850.00 **feet** 259.08 **meters**
Observed Area 0.76 **acres** 0.31 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Cow trampling and waste common (Bassette 2003).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Neither indirect nor cumulative effects from the proposed Shelby Bypass are predicted (Bassette 2003).
Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Element Occurrence Report

EO ID 22195 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61338

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U08DOT01NCUS	NCDOT. 2008. US-74 Shelby Bypass, Cleveland County, North Carolina, TIP No. R-2707: Final Environmental Impact Statement. 22 January 2008. FHWA-NC-EIS-97-02-F. [Note: document contains a map showing the locations of Hexastylis naniflora sites 1-36].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Mason	**Version Date**	1/30/2009 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/4/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 5:02:57PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	7.094413
WATERSHED	194 - 03050105
MAPSHEET	40120 - 35081-C6
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
HECTARES	2.871019
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requested
UTM_ZONE	Not processed per agreement with Plaintiff/Requested
LATITUDE_DD	Not processed per agreement with Plaintiff/Requested
UTM_NORTHING	Not processed per agreement with Plaintiff/Requested
MAPSHEET	40121 - 35081-C5
HUC_12	030501050704
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 22195 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61338

Record Create User	BLW	**Record Create Date**	9/12/2005 11:30:08AM
Last Modified By	JLA	**Last Modified Date**	10/28/2015 9:42:23AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 22194 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61334

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 187 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 36095 **Parent EO Shape ID** 159,555.00 **Parent EO Number** 307

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: Beaverdam Creek: Ravine just east of SR 1319, BYP sites 37 and 38
NCDOT TIP: R-2707

Directions

First Broad River: Beaverdam Creek: Ravine just east of SR 1319, Proposed Shelby Bypass Sites 37 and 38 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 22194 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61334

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Suitable habitat between this EO and EO 188 should be searched for additional occurrences, discovery could create a sub-principal relationship (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional Yes **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
29590	2001; Bassett et al.First Broad River: E		Line	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2001

Surveyor

Surveyor
Jared Gray, NC DOT
Matt Haney, NC DOT
Tim Bassette, NC DOT

Element Occurrence Report

EO ID 22194 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61334

Survey Date 2001-04-11
Last Observation Date 2001-04-11 **First Observation Date** 1998-2001
EO Data Bassett, Gray, and Haney counted 264 plants over 0.47 acres, in two groups (sites) on 11 April 2001 (Basette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 264 plants over 0.47 acres, in two groups (sites) (Basette 2003).
Landscape Context Site 37 [EO 187, inpart]: Invasive species in site, moderate canopy, debris pile and dirt road located in site; Site 38 [EO 187, in part]: moderate canopy, dense understory with invasive species (Bassette 2003).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-11
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Site 37 [EO 187, inpart]: Invasive species in site, moderate canopy, debris pile and dirt road located in site; Site 38 [EO 187, in part]: moderate canopy, dense understory with invasive species (Bassette 2003).

Min. Elevation	790.00	**feet**	240.79	**meters**
Max. Elevation	850.00	**feet**	259.08	**meters**
Observed Area	0.47	**acres**	0.19	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics EO will not have any indirect or cumulative effects associated with the proposed Shelby Bypass (Bassette 2003).
Topic Keywords

Keywords
IMPACTS
NC DOT

Element Occurrence Report

EO ID 22194 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 61334

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Wichmann	**Version Date**	10/4/2005 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	10/4/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	9/12/2005 11:26:41AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	4.91
HECTARES	1.989
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40120 - 35081-C6
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
WATERSHED	194 - 03050105
HUC_12	030501050704
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	9/12/2005 11:26:44AM
Last Modified By	LGR	**Last Modified Date**	10/14/2015 3:34:54PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21920 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 60016

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 184 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20289 **Parent EO Shape ID** 48,327.00 **Parent EO Number** 96

Site/Directions

Sites

Site ID	Name	Auto-calculated
772	Murrays Mill/Upper Balls Creek Natural Area	N

Survey Site

Survey Site Name
Catawba River: Murrays Mill/Upper Balls Creek Natural Area (Sub EO of EO 096)
NCDOT B-2119
NCDOT TIP: R-2824

Directions

Catawba River: Murrays Mill/Upper Balls Creek Natural Area. Former sub EO 022. This is a sub EO of Parent EO 096 (Wichmann 2005). Near Bridge crossing (B-2119) at Murrays Mill over Balls Creek (SR 1003). Downstream of bridge on slope along east side of stream (Savidge 1994).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F1	Catawba			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21920 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 60016

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

Located within 2.0 kilometers of sub EOs 038 and 039 and not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49041	2010-09-30; NCDO	Murray's Mill Site	Polygon	Delimited				GPS, 10-meter acc
90107	2013; NCDOT	Murray's Mill Site	Polygon	Delimited				GPS, 5-meter accu
90106	2011; NCDOT	Murray's Mill Site	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994
Quantitative ground survey	2004, 2009, 2011, 2013

Element Occurrence Report

EO ID 21920 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 60016

Surveyor

Surveyor

NC DOT Personnel
Tim Savidge, NC DOT
Gill Newberry
Dennis Herman, NCDOT
Tim Bassette, NCDOT
Anne Burroughs, NCDOT
Jared Gray, NCDOT
Matt Haney, NCDOT
Kathy Herring, NCDOT
Steve Mitchell, NCDOT, NEU BSG

Survey Date 2013-10-30

Last Observation Date 2013-10-30 **First Observation Date** 1994-05-11

EO Data 2013: 11,860 plants counted on 29-30 October by NCDOT biologists (NCDOT 2013).
2011: 14,488 plants counted on 5-6 &12-13 December by NCDOT biologists (NCDOT 2011).
2010: Total of 13,062 plants counted by NCDOT biologists on 29 and 30 September 2010 on the Bowman tract and the "original NCDOT site" [see documentation for map] (Herman 2010).
2009: 13,062 plants counted on 29-30 September by NCDOT biologists (NCDOT 2009)
More than 9,000 plants are within construction project area (DOT TIP: B-2119); 356 plants are expected to be impacted by construction activites in 1995; however, 9,000 plants are to be protected on-site in a 25 acre area (Wells 2006).
2004: Approximately 9,000 plants counted in the late fall or early winter 2004 using line transects; this includes the Bowman Tract and Murrays Mill (Wichmann per. com. Jared Gray 2005).
1995-1996: Over 1000 plants observed by Newberry in 1995-1996. Found on both sides of the creek. Extensive population with many large plants. The density is low making estimates of size difficult (Newberry 1996).
1994: Estimated 100-1000 plants in leaf and flower on 11 May, no counts made; multiple-aged stand; widespread throughout slope; widely scattered throughout area (Savidge 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Inventory and monitoring will occur every two years for a total of three monitoring sessions (Herman 2010).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO multiple-aged stand; widespread throughout slope; widely scattered throughout area (Savidge 1994).

Condition Rating

Size of EO 13,062 (2010). < 9,000 (Wichmann per. com. Jared Gray 2005). Estimated 100-1000 plants in leaf and flower on 11 May, no counts made (Savidge 1994).

Landscape Context partially located within a nationally significant natural area (Wichmann 2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2010-09-30

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic Oak-Hickory Forest on slope grading into Balls Creek; relatively undisturbed; moist, mid to lower slope, filtered light/shaded with Goodyera pubescens, Kalmia latifolia, and Chimaphila maculata (Savidge 1994).

Min. Elevation	850.00	**feet**	259.08	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	6.00	**acres**	2.43	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

Element Occurrence Report

EO ID 21920 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 60016

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments NCDOT purchased 24.74 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Murrays Mill and Bowman Tract (contiguous) are "going through purchase" by NC DOT - property boundaries will be sent to NHP after survey (Wichmann per. com. with Jared Gray on 6 December 2005). Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005). Land purchased by NC DOT around Murrays Mill to be turned over to the Catawba County Historic Preservation Society (1994).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2038	Murrays Mill Conservation Site			N
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management ? - Questionable

Management Comments A conservation/managment plan has been developed (Herman 2010).

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC DOT	
Private individual		

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments The overall threat from invasive species is low on both Tract 1 and 2. The following invasive species were found throughout Murray's Mill Conservation Area: Elaeagnus umbellata, Ligustrum sinense, Lonicera japonica, Albizia julibrissin, Rosa multiflora (NCDOT 2013).

Additonal Topics EO is associated with NC DOT project B-2119. Part of Parent EO 096 having 37,800 plants prior to NCDOT impacts of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005). Will be impacted by Bridge replacement (DOT 1994). This bridge project was subject to consultation with USFWS (ASNC log no. 4-2-95-102). The 1995 Biological Opinion (of non-jeopardy) issued by the Service was contingent upon purchase of approximately 29 acres at Murrays Mill for perpetual protection of the species. As of early 2006, NCDOT is working to acquire an additional parcel (the Bowman Tract) which will bring the total to approximately 34 acres in protective ownership (D. Herman, NCDOT, personal communication with C.Wells, USFWS, 8/2006) [C.Wells, 8/2006].

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21920 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 60016

References

Reference Code	Full Citation	EO Reference Primary
F94CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U04DOT01NCUS	NC Department of Transportation and Catawba Coutny Historical Association. 2004. Draft Conservation Plant for Murrays Mill Conservation Area, Catawba County, NC. 2pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F01DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff in 2001.	N
F10CON02NCUS	2010. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N

Specimen

Specimen Description
Dr. Newberry of USC-Spartanburg, T. Savidge, 11 May 1994

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	8/4/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 1:41:48PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21920 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 60016

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501011104
LONGITUDE_DD	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
Acreage	23.7043332404
Hectares	9.59281813009
WATERSHED	190 - 03050101
MAPSHEET	39026 - 35081-F1
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	BLW	**Record Create Date**	8/3/2005 4:28:43PM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:13:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59501

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 183 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground

Directions

Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground. Ravine draining to North Fork Mountain Creek, north and east of Balls Creek Campground, approximately 0.8 miles north of the juction of SR 1006 and SR 1814, plant found along ravine about 700 meters and 1,000 meters southeast of SR 1003 (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F1	Catawba			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59501

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species; About 5.0 kilometers south of principal EO 096 at Murray's Mill (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28941	2005; Padgett	Catawba River: Nor	Polygon	Delimited				GPS, 5-meter accu
28942	2005; Padgett	Catawba River: Nor	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005

Element Occurrence Report

EO ID 21835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59501

Surveyor

Surveyor

HARP personnel
Jim Matthews
Padgett
Wetland Natrl. Resource Consultnts (WNR) personnel

Survey Date 2005-06-07

Last Observation Date 2005-06-07 **First Observation Date** 2005-04-26

EO Data Padgett estimate 200-300 plants on 07 June 2005; some plants located in recent cut-over and proliferating as expected after recent cutting (Padgett 2005). Identification verified by J. Matthews with staff members from WNR, Inc. and Harp on 26 April 2005 (J. Roberston 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Plants proliferating as expected after recent cut-over, likely to stabalize over time (Padgett 2005).

Condition Rating

Size of EO 200-300 plants (Padgett 2005).

Landscape Context Agricultural fields, natural habitat to the southeast along creek; based on 1998 aerial photography (Wichmann 2005).

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-06-07

EO Rank Comments EO rank based on EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	840.00	**feet**	256.03	**meters**
Max. Elevation	910.00	**feet**	277.37	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Planned ski lake on site, "design team has re-planned to completely avoid all populations of the heartleaf. The land where the plant populations are located and the land surrounding the plant populations have been designated as common open space" (Roberston 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2427	NC Division of Mitigation Services Easement		N - No	N

More Management ? - Questionable

Management Comments Eastern-most portion of the polygon falls partially within Mitigation Services Easement.

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Mr. Bob MacLeod	P.O. Box 320 Denver, North Carolina 28704

Element Occurrence Report

EO ID 21835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59501

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05ROB01NCUS	Robertson, J. 2005. Letter and maps regarding Endangered Species Biological Assesment for MacLeod Ski Lake Project in Newton, North Carolina. 8pp.	N
F05PAD04NCUS	Padgett, James. 2005. Natural Heritage survey of miscellaneous sites.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 10/15/2015 12:00:00AM
Transcribed By Wichmann **Transcription Date** 8/10/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 1:36:46PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement **Y Coordinate** Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501011201
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DD	Not processed per agreement with Plaintiff/Requeste
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requeste
UTM_EASTING	Not processed per agreement with Plaintiff/Requeste
UTM_NORTHING	Not processed per agreement with Plaintiff/Requeste
UTM_ZONE	Not processed per agreement with Plaintiff/Requeste
Acreage	1.32627748658
Hectares	0.536726285014
WATERSHED	190 - 03050101
MAPSHEET	39026 - 35081-F1
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 21835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59501

Record Create User	MAF	**Record Create Date**	7/26/2005 2:04:13PM
Last Modified By	JLA	**Last Modified Date**	10/28/2015 9:35:44AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21834 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59497

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 182 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N

Survey Site

Survey Site Name

Broad River: Hensons Creek Natural Area, large ravine down from Big Island Bridge and S of the river (Sub of 099).

Directions

Broad River: Hensons Creek Natural Area, large ravine approximately 0.25 mile down-river from Big Island Bridge (SR 1106) on the south side of the Broad River and 0.25 mile east of SR 1106, in the Hensons Creek Natural Area. This is a sub EO of parent EO 099 (Wichmann 2005). James Padgett's 2001 sub-population B, see map for details.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21834 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59497

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

EO data (including condition, size, and observed area), general description, and landscape context needed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28535	2005; Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Survevor
James Padgett, ASU
Gill Newberry

Element Occurrence Report

EO ID 21834 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59497

Survey Date 2001-05-13
Last Observation Date 2001-05-13 **First Observation Date** 1996
EO Data 2001: 3-5,000 estimated in the Hensons Creek Natural Area as whole; includes EOs: 182, 249, 250 and 251 (Padgett 2001). Subpopulation 1: About 1000 clumps estimated, plants in leaf and flower on 13 May 2001 (Padgett 2001).
1995: Size estimated in 1994 to be 200 plants; a reevaluation in 1995 by Newberry estimated size of population to be only about 100 plants (Newberry 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A? - Possibly excellent estimated viability **EO Origin Subrank**

EO Rank Date 2001-05-13
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Rich Cove Forest and Kalmia Bluff with associated species include Quercus spp, Carya spp, Fagus grandifolia, Cornus florida, Kalmia latifolia, Rhododendron sp, Hamamelis virginiana, Leucothoe sp, Polystichum acrostichoides, Osmunda sP, Toxicodendron radicans, and Parthenocissus quinquefolia. Some areas have been logged, but the coves have been untouched (Padgett 2001).

Min. Elevation	200.00	**feet**	60.96	**meters**
Max. Elevation	250.00	**feet**	76.20	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 21834 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59497

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/30/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 10:55:54AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2077.000000 - S.USNCHP*335
SITE	2493.000000 - S.USNCHP*4588
Site_Code	2077
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	19.5507070185
Hectares	7.91190263996
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH

Element Occurrence Report

EO ID 21834 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59497

Record Maintenance

Record Create User	BLW	**Record Create Date**	7/26/2005 2:01:08PM
Last Modified By	JTF	**Last Modified Date**	10/8/2015 11:09:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21832 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59449

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 181 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Dills Creek, unnamed tributary south of Kudzu Rare Plant Site (sub EO of 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Dills Creek, unnamed tributary south of the Kudzu Rare Plant Site on the northeast side of Dills Creek. This is a sub EO of parent EO 099 (Wichmann 2005). 1st major tributary northeast of the Broad River, north of SR 1123 (Wichmann 2005). "take SR 1122 [N], 1.2 miles to [unnamed] road on left before you get to SR 1120 (on the right), old road goes across pature to head of stream, approximately 0.3 mile (see attached map)" (Padgett 2001). 0.2 mile south of SR 1122 at the head of a stream [directions from former subpopulation 2 of EO 010].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 21832 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59449

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This sub EO was formerly subpopulation 2 of EO 010 but has been separated into a separate sub EO since it is not within the Boundaries of the Kudzu Farm Rare Plant Site and is separated from EO 010 by a cleared field; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68198	Padgett 2012	Dills Creek, east of	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2005, 2012

Element Occurrence Report

EO ID 21832 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59449

Surveyor

Surveyor

James Padgett, NHP

James Padgett, ASU (2001)

Survey Date 2012-Spring

Last Observation Date 2012-Spring **First Observation Date** 2001-03-27

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2012: Padgett remapped this population in the spring of 2012 as part of the USFWS Flex Fund status survey; individual plants were not counted (Padgett 2012).
2005: 500-750 estimated plants seen on May 2005 (Padgett 2005).
2001: Estimated 700 clumps plus single and double leaves present from the head of the stream to 120-150 yards downstream, plants in leaf and flower on 27 March (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 500-750 estimated plants seen on May 2005 (Padgett 2005);700 plus clumps (Padgett 2001).

Landscape Context

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**

EO Rank Date 2001-03-27

EO Rank Comments EO rank is based on EO rank specs for this species and current EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic hardwood community with Fagus grandifolia, Quercus alba, Polystichum acrostichoides, Sanguinaria canadensis, Lonicera japonica, Rhododendron nudiflorum, & Kalmia latifolia; ravine to steep uphill slopes and flat along stream bed; moist to dry conditions in filtered light (Padgett 2001).

Min. Elevation	220.00	**feet**	67.06	**meters**
Max. Elevation	250.00	**feet**	76.20	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Partnership (legal en	Silver Spring LLC (V.M. Henson 2012)	2012 no response

Element Occurrence Report

EO ID 21832 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59449

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F12NHP01NCUS	NCNHP Staff, 2012 Field Survey	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen
Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 3/18/2016 12:00:00AM
Transcribed By Wichmann **Transcription Date** 7/26/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By KAI **Digital Mapping Date** 6/11/2013 2:58:46PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement **Y Coordinate** Not processed per agreement

Element Occurrence Report

EO ID 21832 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 59449

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	1.75802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HUC_12	030501050501
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
ACREAGE	4.344145
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588

Record Maintenance

Record Create User	BLW	**Record Create Date**	7/26/2005 9:13:40AM
Last Modified By	JTF	**Last Modified Date**	3/18/2016 6:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21680 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58738

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 180 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20296 **Parent EO Shape ID** 48,390.00 **Parent EO Number** 101

Site/Directions

Sites

Site ID	Name	Auto-calculated
328	Camp Creek Bluff	N

Survey Site

Survey Site Name

Jacob Fork West (per Gaddy 1981)

South Fork Catawba River: Jacob Fork, Camp Creek Bluff (This is a sub EO of EO 101).

Directions

South Fork Catawba River: Jacob Fork, Camp Creek Bluff. This is a sub EO of Parent EO 101 (Wichmann 2005). Former site B of EO 005 (Wichmann 2005). The north-facing bluff along Jacob Creek [Fork] On west side of SR 1910, About 1.2 miles north of its junction with SR 1924 [additional coordinates Not processed per agreement with Plaintiff/Res Not processed per agreement with Plaintiff/Res].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21680 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58738

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49129	2009; NCNHP	Jacob Fork West	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981

Surveyor

Survevor
L.L. Gaddy
Gill Newberry

Element Occurrence Report

EO ID 21680 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58738

Survey Date 1995
Last Observation Date 1995 **First Observation Date** 1981-05
EO Data 1995: About 100 plants observed by Newberry in 1995 (Newberry 1996).
1981: About 100 plants over one acre observed by Gaddy in May 1981, average seed production, few seedlings (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Area is being developed. New houses and forest clearing are reducing size of populations (Newberry 1996). Average seed production, few seedlings (Gaddy 1981)

Condition Rating
Size of EO About 100 plants over one acre observed by Gaddy in May 1981
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 1981-05
EO Rank Comments EO rank is based on EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Bluff, with mature canopy of Quercus alba, Pinus strobus, Fagus; understory of Acer rubrum; shrub layer of Kalmia and Rhododendron maximum.

Min. Elevation	1,170.00	**feet**	356.62	**meters**
Max. Elevation	1,190.00	**feet**	362.71	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments This EO was formerly Site B of EO 005, it has been split out as a separate sub EO for better data organization; principal EO 101 represents both sub EO 005 and sub EO 180, in addition to sub EO 006 (Wichmann 2005).

Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 21680 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58738

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	7/13/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/28/2009 12:46:19PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1828 - NCBURK
Site_Code	328
SITE	328.000000 - S.USNCHP*142
WATERSHED	191 - 03050102
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	
LATITUDE_DMS	
ACREAGE	3.900463
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	
LONGITUDE_DD	
HECTARES	1.578468
UTM_ZONE	Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ
MAPSHEET	39389 - 35081-E5
HUC_12	030501020201

Record Maintenance

Element Occurrence Report

EO ID 21680 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58738

Record Create User	BLW	**Record Create Date**	7/13/2005 12:29:59PM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21677 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58702

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 179 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (parent of 030 and 162)

Directions

South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital. This is a parent EO of two sub EOs: 030 and 162. See each Sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21677 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58702

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO277 is located 2.5km to the west. EO31 is located 1.6-2km to the SW and on the other side of I-40.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28655	Parent EO 179	South Fork Catawb	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 21677 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58702

Survey Date 2012-12-17
Last Observation Date 2012-12-17 **First Observation Date** 1995-03-22
EO Data This is a parent EO of sub EOs 030 and 162. See each sub EO for detailed data (Wichmann 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO insufficient EO data
Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**
EO Rank Date 2005-Spr
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21677 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58702

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	7/12/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 1:31:45PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
PARENT_EO_ID	21457
HUC_12	030501020302
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	3.74176383929
Hectares	1.51424044001
WATERSHED	191 - 03050102
MAPSHEET	39024 - 35081-F3
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 21677 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58702

Record Create User	BLW	**Record Create Date**	7/12/2005 5:50:44PM
Last Modified By	JLA	**Last Modified Date**	7/26/2016 1:32:12PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21676 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58661

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 178 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Hoyle Crk-Micol Crk, Lovelady (parent EO of 159, 160, 161, 254, 255, 256, 280-284)

Directions

Mapped additional locations along Lake Rodhiss on CWMTF propery along numerous sreams and along north-facing slopes (Padgett 2016). Catawba River: Hoyle Crk-Micol Crk, Lovelady. This is a parent EO of eight Sub EOs: 159, 160, 161, 254, 255, 256, 280, 281, 282, 283, 284 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21676 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58661

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent EO 178 is approximately 1.5 air kilometers from EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore considered independent principal EOs (Wichmann and Franklin 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

There is a high probability of additional occurrences to be located along the Lake, numerous small streams, and north-facing slopes in suitable habitat (Padgett 2016)

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52948	Parent EO 178	Hoyle Creek-Micol	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 21676 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58661

Survey Date 2016-04-05
Last Observation Date 2013-05-14 **First Observation Date** 2004-Fall
EO Data Aditonal areas surveyed and mapped from CWMTF application site visit (Padgett 2016). Catawba River: Hoyle Creek-Micol Creek, Lovelady. This is a parent EO of 11 Sub EOs: 160, 161, 254, 255, and 256, 281, 282, 283, 284, and 310 (Robinson 2005). See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO EO 310: 1500-2000 plants (2016).
EO 159: estimated 5,650 plants (2005)
EO 160: estimated 1,484 plants (2005)
EO 161: estimated? 6,123 plants (2005)
EO 254: 186 plants (2006)
EO 255: 155 plants (2006)
EO 256: 210 plants (2006)
Landscape Context EO 310 Mesic Mixed Hardwoods, and mixed pine woodlands (Padgett 2016).
EO 159: adjacent to mixed mesic hardwood slopes
EO 160: mixed pine forest
EO 161: mixed mesic hardwood forest
EO 254: not reported
EO 255: not reported
EO 256: not reported
EO 280: 126 plants
EO 281: not reported
EO 282: not reported

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-04-07
EO Rank Comments The rank was changed from A? to A rank to reflect the additional plants found and mapped during recent surveys. Some of the additional areas surveyed on 5 April 2016 occur in planted pines with some mixed hardwoods that allow enough of a suitable habitat for the plant to persist and do reasonably well (Padgett 2016).
EO Rank Specifications Version Used

Description

EO Type
General Description Slopes and stream corridors along the south side of the lake containing north-facing slopes and suitable habitat. The forests is a mixture of planted pines, moxed hardwoods, Dry-Mesic Mixed Hardwoods, and Mesic Mixed Hardwoods. Coves in some locations contain Kalmia latifolia, Rhododenron maximun and R. minus and form marginal Acidic Cove Forest.

Min. Elevation	1,080.00	**feet**	329.18	**meters**
Max. Elevation	1,180.00	**feet**	359.66	**meters**
Observed Area	93.00	**acres**	37.64	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments Some of the areas of occurrence are propsoed to be added into conservation through a CWMTF grant (application submitted and site surveyed - Padgett 2016).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes
Management Comments There needs to be some management decisions made concerning the planted pines to consider if they should bew cut to allow hardwoods to regenerate (Padgett 2016).

Element Occurrence Report

EO ID 21676 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58661

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F13CON01NCUS	2013. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
P05WEL02NCUS	Wells, C. 2005. Email regarding Hexastylis naniflora population in Burke County.	N
U08BOA01NCUS	Boaze, Pam. 2008. Monitoring report year-2: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2008.	N
U09BOA01NCUS	Boaze, Pam. 2009. Monitoring report year-3: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.	N
U10BOA01NCUS	Boaze, Pam. 2010. Monitoring report year-4: Dwarf-flowered Heartleaf (Hexastylis naniflora) on the East Burke High School site, Burke County, NC. Prepared by Fish and Wildlife Associates, Inc. June 2009.	N
G10DOT01NCUS	Bassette, Tim. 2010. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2428. [Biological Opinion is included in the materials].	N
F16PAD01NCUS	Padgett, J.E. Field Survey and Field Notes from 2016.	Y
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 21676 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58661

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/18/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	12/5/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	7/18/2016 12:10:05PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010801
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	93.0883582902
Hectares	37.671580215
WATERSHED	190 - 03050101
MAPSHEET	38656 - 35081-G5
MAPSHEET	39022 - 35081-F5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	7/12/2005 9:41:25AM
Last Modified By	LGR	**Last Modified Date**	7/18/2016 12:55:29PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21645 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58421

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 177 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Floyds Creek, Long Branch (Parent EO of sub EOs: 016, 107, 122, 163,164,165,& 166)
USFWS Flex Fund Monitoring Site 9 including sub records 16, 107, 163, 164, 165, 166

Directions

Broad River: Floyds Creek, Long Branch. This is a parent EO of 7 sub EOs: 016, 107, 122, 163, 164, 165, and 166 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21645 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58421

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and area not separated by an area of persistently unsuitable habitat greater than 1.0 Kilometer wide (Wichmann 2005). See map for details. Parent 176 is 1.6km N-NW and in watershed to StonecutterCreek; EO151 is 1.4km to the south and on a tributary to Richardson Creek (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68205	Parent EO 177	Broad River: Floyds	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

James Padgett, NHP
Maxwell Feldman, NHP intern
Sean Bloom, CLC

Element Occurrence Report

EO ID 21645 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58421

Survey Date 2016-05-11
Last Observation Date 2016-05-11 **First Observation Date** 1977
EO Data 2016: 537 plants counted by Bloom on May 11, 2016 in monitoring plots in Sub EO 164. Bloom also re-delinated EO 164 and 163 with a revised total acreage of 5.67 acres. The extrapolated estimate of total plants in parent EO is 12,687 plants (Bloom 2016).
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EO 164. Estimated 5242 total plants covering the entire 5.21 acres (Padgett and Feldman 2015).
2014: Padgett counted 246 plants within monitoring plots on 20 May 2014 and estimated 5340 plants covering 5.21 acres of mapped area (Padgett 2014).
2013: In May 2013, Padgett and Israel counted 240 plants monitoring plots and estimated a total 2350 plants (Padgett 2013).
2012: 204 plants counted in 0.24-acre sample plot. Estimate of 1998 plants for entire population (Padgett 2012).
This is a parent EO of 7 sub EOs: 016, 107, 122, 163, 164, 165, and 166 (Wichmann 2005). See each sub EO for detailed EO data (Wichmann 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO Over 2,000 when all sub EOs are taken together (2015).
Landscape Context Road side and among development (Wichmann 2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-05-11
EO Rank Comments EO rank based on EO Rank Specs for this species and all sub EOs, when taken together (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area 2.35 **acres** 0.95 **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

Element Occurrence Report

EO ID 21645 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58421

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes	N
F87NHP01NCUS	NHP Staff. 1987. Field Survey.	N
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.	N
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/27/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	8/8/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/16/2016 11:42:31AM

Element Occurrence Report

EO ID 21645 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58421

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050502
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	6.67080546174
Hectares	2.69958336
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	7/7/2005 2:51:46PM
Last Modified By	JTF	**Last Modified Date**	7/27/2016 6:13:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21642 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58387

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 176 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2437	Davenport Road/Mountain View Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Cleghorn Creek tributary/US 221 (parent of sub EOs: 167,168,169,&170).
USFWS Flex Fund Monitoring Site 8 including sub records 167, 170

Directions

Broad River: Cleghorn Creek triburary/US 221. This is a Parent EO of 4 Sub EOs: 167, 168, 169, and 170 (Wichmann 2005). See map for details.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21642 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58387

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. Parent 176 is 1.6km N-NW and in watershed to StonecutterCreek; EO151 is 1.4km to the south and on a tributary to Richardson Creek (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68210	Parent EO 176	Davenport Road/M	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

James Padgett, NHP
Maxwell Feldman, NHP
Sean Bloom, CLC

Element Occurrence Report

EO ID 21642 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58387

Survey Date 2016-05-20

Last Observation Date 2016-05-20 **First Observation Date** 2005-03-30

EO Data 2016: 634 plants counted by Bloom on 20 May 2016 in 0.68 acres of monitoring plots in sub EOs 167 and 170. Bloom re-delinated the entire population (including all subEOs) to a total of 7.24 acres in 2016, with an estimated 6,750 plants in the entire population (Bloom 2016).
2015: 778 plants counted on 19 May 2015 in 0.68 acres of monitoring plots in sub EOs 167, 170, and 176. Estimated 6,400 total plants covering the entire 6.84 acres (Padgett and Feldman 2015).
2014: 797 counted plants within monitoring plots on 20 May 2014 and estimated 8000 plants covering 6.84 acres of mapped area (Padgett 2014).
2013: 780 plants counted from monitoring plots totaling 0.68 acre. Estimated population size for the entire population is 7846 plants (Padgett 2013).
2012: 638 plants counted in 0.68-acre sample plot. Estimate of 6418 plants in entire population. (Padgett 2012). This is a parent EO of 4 sub EOs: 167, 168, 169, and 170. See each sub EO for detailed EO data (Wichmann 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Total estimated population 6,750 plants in 2016.
167: > 3,000 (2005)
168: > 1,000 (2005)
169: 042 (2005)
170: 340 (2005)

Landscape Context Very high to medium quality sites (2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-05-20

EO Rank Comments EO rank is based on EO Rank Specs for this species and EO data for each sub EO, when taken together (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation		**feet**		**meters**
Max. Elevation		**feet**		**meters**
Observed Area	6.84	**acres**	2.77	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Element Occurrence Report

EO ID 21642 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58387

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.	N

Specimen
Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 7/26/2016 12:00:00AM
Transcribed By Wichmann **Transcription Date** 8/8/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 6/16/2016 11:46:08AM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21642 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 58387

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62946
SITE	2437.000000 - S.USNCHP*4310
HUC_12	030501050309
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	9.82937614798
Hectares	3.97781353998
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	7/7/2005 1:13:16PM
Last Modified By	JTF	**Last Modified Date**	7/27/2016 6:13:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21406 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57193

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 175 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22403 **Parent EO Shape ID** 63,307.00 **Parent EO Number** 245

Site/Directions

Sites

Site ID	Name	Auto-calculated
2439	Floyds Creek Tributary Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Floyds Creek Tributary Rare Plant Site (east) (Sub of 099).
NCDOT TIP: R-2233

Directions

Broad River: Floyds Creek Tributary Rare Plant Site (east). This is a Sub EO of Parent EO 099 (Wichmann 2005). 1.5 road miles north of the Broad River on the east side of US 221(Wichmann 2005). "East of US 221; approximately 1500' south of intersection of US 221 and SR 2109; along mostly north to northwest-facing banks of an unnamed tributary to Floyd's Creek" (Renninger 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21406 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57193

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shape files submitted with report of occurrence (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located across road (US 2211) but in the same ravine as sub EO 113; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Detailed survey conducted by HW Lochner personnel in 2005 (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
39938	2010; NCNHP	Broad River: Floyds	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005
Qualitative ground survey	2003

Element Occurrence Report

EO ID 21406 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57193

Surveyor

Surveyor

Heather Renninger, HW Lochner
Emily Feultress, HW Lochner
Ken Roeder, HW Lochner
James Padgett, NHP

Survey Date 2010-01-27

Last Observation Date 2010-01-27 **First Observation Date** 2003-05-13

EO Data 2010: 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - documentation with EO 286).
2005: When combined with sub EO 113 (located across US 221) over 1175 plants were observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 100 clumps in leaf and flower, seedling and vegetative reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Some invasives present; evidence of past cattle impacts (Fontaine 2009). In leaf and flower, seedling and vegetative reproduction evident (Renninger 2005).

Condition Rating

Size of EO 1175 plants conbined in sub EO 113 and sub EO 175 observed and counted by H W Lochner and Padgett in April 2005 (Padgett 2007). Approximately 100 clumps (Renninger 2005).

Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2007-01-11

EO Rank Comments EO rank changed based on population size information in regards to EO Specs (Padgett 2007). EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic Mixed Hardwood forest grading to a Dry-mesic oak hickory of medium quality - impacted by cattle in the past, especially near stream; Associated species: Kalmia, Quercus alba, Quercus rubra, Carya sp., Fagus grandiflora, Carpinus caroliniana, Cornus florida. Also in white pine plantation upslope on west of US 221 (Renninger 2003).

Min. Elevation	220.00	**feet**	67.06	**meters**
Max. Elevation	240.00	**feet**	73.15	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Element Occurrence Report

EO ID 21406 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57193

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics 62 plants and 0.374 acres of this EO and EO 113 expected to be directly impacted and 123 plants and 0.744 acres expected to be indirectly impacted by this project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/25/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	8/5/2005 12:00:00AM
Manual File Note	This is a sub EO of principal EO 099; all sub EOs are located within 2.0 kilometers of one another and are not separated by an area of unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).		

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/22/2015 1:05:27PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Element Occurrence Report

EO ID 21406 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57193

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62948
SITE	2493.000000 - S.USNCHP*4588
SITE	2439.000000 - S.USNCHP*4312
Site_Code	65945
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.6990233945
Hectares	0.687571435017
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH
PARENT_EO_ID	66280

Record Maintenance

Record Create User BLW **Record Create Date** 5/2/2005 5:12:02PM

Last Modified By JTF **Last Modified Date** 11/4/2015 11:14:58PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 21405 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57190

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 174 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 & N of SR 2125 (sub EO of 247).
NCDOT TIP: R-2233

Directions

Broad River: Floyds Creek near Harris, unnamed tributary west of US 221 and north of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). "West side of US 221, approximately 300 feet south of Floyd's Creek" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21405 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57190

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Shapefiles provided with report of this occurrence were used to digitize the source feature associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This EO is less than 0.1 km away from EO 114, the two occurrences are separated by road and are therefore treated as sub EOs of the same principal EO; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28191	2005; Lochner and	Broad River: Floyds	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2003, 2005

Surveyor

Surveyor
Susan Smith, HW Lochner
Ken Roeder, HW Lochner
James Padgett, NHP

Element Occurrence Report

EO ID 21405 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57190

Survey Date 2010-01-27
Last Observation Date 2010-01-27 **First Observation Date** 2003-05-03
EO Data 35 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286). 119 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007). 75 clumps over 0.26 acres in leaf and flower, vegetative reproduction evident (S. Smith 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Few invasives present (Fontaine 2009). In leaf and flower, vegetative reproduction evident (S. Smith 2003).

Condition Rating
Size of EO 119 clumps wer observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007). 75 clumps over 0.26 acres (S. Smith 2003).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-05-03
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Mixed mesophytic forest; fairly undsiturbed habitat with Osmunda cinnomomea, Polystichum acrosticoides, Liriodendron tulipifera, and Acer rubrum (S. smith 2005).

Min. Elevation	810.00	**feet**	246.89	**meters**
Max. Elevation	830.00	**feet**	252.98	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 21405 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57190

Additonal Topics 0.080 acre and 37 plants to be directly affected and 0.217 acre and 99 plants to be indirectly affected by this project (Fontaine 2009 - see Biological Assessemnt). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005). "Potential highway widening site" (S. Smith 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/4/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	7/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:05:43PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21405 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57190

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.236433189873
Hectares	0.0956812649981
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 5:09:07PM
Last Modified By	JTF	**Last Modified Date**	11/4/2015 11:13:56PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21404 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57181

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 173 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad RIver: Floyds Creek, tributary between Floyds Church and Jerusalum Church (Sub of 247).
NCDOT TIP: R-2233
NCDOT TIP: R-2824

Directions

Broad River: Floyds Creek, tributary between Floyd's Church and Jerusalum Church. This is a sub EO of 247 (Wichmann 2005). "east side of US221, South of SR2125 on the terrace between two unnamed tributaries to Floyd's Creek, near trailer park" (Roeder 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21404 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57181

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS files submitted with report of occurrence (Wichmann 2005), map included in survey form submitted by Roeder (Robinson 2015).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Detailed survey of the area conducted by H.W. Lochner personnel in 2003 (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28187	2003-05-04; Roede	Broad RIver: Floyd	Line	Estimated	25.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003
Quantitative ground survey	2005

Surveyor

Surveyor
Ken Roeder, HW Lochner
Susan Smith, HW Lochner

Element Occurrence Report

EO ID 21404 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57181

Survey Date 2005-04
Last Observation Date 2005-04 **First Observation Date** 2003-05-04
EO Data 2005: 102 clumps were observed and counted in April 2005 by Susan Smith (HWLochner, Inc) (Smith (Padgett 2007).
2003: Less than 20 clumps and stems in leaf and flower, vegetative reproduction evident (Roeder 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Many invasive species present (Fontaine 2009). Leaf and flower, vegetative reproduction evident (Roeder 2003).
Condition Rating
Size of EO 102 clumps were observed and counted in April 2005 by H W Lochner (Padgett 2007). Less than 20 clumps and stems (Roeder 2003).
Landscape Context Former cow pasture.

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-5-04
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Terrace above creek, Mesic Mixed hardwood with Lonicera japonica, Liriodenderon tulipifera, and Acer rubrum; actively grazed by cattle (Roeder 2005).

Min. Elevation	230.00	**feet**	70.10	**meters**
Max. Elevation	250.00	**feet**	76.20	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 21404 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57181

Additonal Topics 21 plants and 0.085 acres subject to indirect effects of the road project (Fontaine 2009). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005). "Actively grazed by cattle, NCDOT TIP R2233A may affect" (Roeder 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/4/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	7/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	5/2/2005 4:54:50PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21404 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57181

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.96903151906
Hectares	0.796840014997
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 4:55:05PM
Last Modified By	JTF	**Last Modified Date**	11/4/2015 11:14:58PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57178

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 172 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2446	Big Horse Creek Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: Big Horse Creek, Parris Tract (south) (sub EO of 099). NCDOT Transplant Site

Directions

Broad River: Big Horse Creek, Parris tract (south). This is a Sub EO of parent EO 099 (Wichmann 2005). "east side of US 221 approximately 2000' north of the SC state line and approximately 3000' south of intersection of SR1113 and US 221; along unnamed tributary to Big Horse Creek" (Renninger 2003). Copy from EO 076: The secondary occurrence (B) [now EO 172 (Wichmann 2005)] is approximately 1.0 miles south of the Broad River (M. Franklin 2004). [(B) now EO 172]: east side of US 221 approximately 2000' north of the SC state line and approximately 3000' south of intersection of SR 1113 and US 221; along unnamed tributary to Big Horse Creek (Renninger 2003).

Locators

Latitude Not processed per ag **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 21403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57178

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shape files submitted with report of occurrence (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located approximately 0.1 miles south of sub EO 076; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Detailed survey conducted by HW Lochner in 2003 (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

"approximately 2000' north of the SC state line" (Renninger 20005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68194	Padgett 2012	Big Horse Creek Ra	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57178

Surveyor

Surveyor

Heather Renninger, HW Lochner
Emily Fentress, HW Lochner
Jackie Wagner, ASU
James Padgett, NCNHP
Lance Fontaine, NCDOT
Misty Franklin, NCNHP

Survey Date 2012-03-12

Last Observation Date 2012-03-12 **First Observation Date** 2003-05-14

EO Data 2012: Wagner et al. observed 50-100 plants on 12 March 2012 (Wagner 2012).
2010: 9 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).
2005: 126 clumps observed and counted in April 2005 by H W Lochner (Padgett 2007).
2004: Copy from EO 072: B [see EO 172]:(secondary site) 9 rosettes occurring on south side of the drainage. The population covers approximately 100 SQM. 5 rosettes were flowering (M. Franklin and J. Padgett 2004).
2003: Approximately 75-100 clumps (10 on each side of US 221) over 0.23 acres, in leaf and flower, seedling and vegetative reproduction evident (Renninger 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Some invasives present (Fontaine 2009). In leaf and flower, seedling and vegetative reproduction evident (Renninger 2003).

Condition Rating

Size of EO 126 clumps observed and counted in April 2005 by H W Lochner (Padgett 2007). Approximately 75-100 clumps over 0.23 acres (Renninger 2003)

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-12

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic Mixed hardwood grading into Dry Mesic Oak Hickory, medium to low quality, north facing slope, junk dumped on banks, associated species: White oak, red oak, Chapinus, Christmas fern, Cornus, sourwood, dog hobble (Renninger 2003).

Min. Elevation 220.00 **feet** 67.06 **meters**

Max. Elevation 240.00 **feet** 73.15 **meters**

Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** N - No **TNC involvement**

Protection Comments RHA (Wichmann 2005).

MA/Ownership

Element Occurrence Report

EO ID 21403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57178

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
933	Parris Heartleaf RHA		N - No	N

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Private	

Owner Comments Private

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics 3 plants and 0.006 acres expected to be directly impacted and 42 plants and 0.077 acres expected to be indirectly impacted by this road project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005). "May be impacted by widening of US 221" (Renninger 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/17/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	7/6/2005 12:00:00AM
Manual File Note			

Element Occurrence Report

EO ID 21403 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57178

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	KAI	**Digital Mapping Date**	6/11/2013 2:54:28PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HECTARES	0.080871
HUC_12	030501050503
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
MAPSHEET	40483 - 35081-B7
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
ACREAGE	0.199835
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
Site_Code	65945
Site_Code	62955
SITE	2446.000000 - S.USNCHP*4319
MANAGED_AREA	933.000000 - M.USNCHP*2986
MA_Code	JTF
SITE	2493.000000 - S.USNCHP*4588
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 4:48:14PM
Last Modified By	JTF	**Last Modified Date**	11/18/2015 11:12:27PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57159

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 170 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21642 **Parent EO Shape ID** 58,387.00 **Parent EO Number** 176

Site/Directions

Sites

Site ID	Name	Auto-calculated
2437	Davenport Road/Mountain View Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Cleghorn Creek/Stonecutter Creek: Tributary S of Pate Road (sub EO of EO 176).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 8 (in part)

Directions

Broad River: Cleghorn Creek/Stonecutter Creek, tributary south of Pate Road (sub EO of 176), approximately 0.33 miles west of the intersection of Poors Ford Road and Pate Road. " I-74 to US 221 North. Right on Poor's Ford Road. Left on Pate Road. Plants are on south side of Road, partially in clearcut" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57159

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68208	Padgett 2012	Davenport Road/Mc	Polygon	Delimited				GPS, 10-meter acc
68209	Padgett EO 170 pld	Davenport Road/Mc	Polygon	Delimited				GPS, 10-meter acc
89939	Bloom 2016	Cleghorn Creek/Sto	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57159

Surveyor

Surveyor

James Padgett, NHP
Heather Renninger, H.W. Lochner
B. Dustin, H.W. Lochner
T. Bassette, H.W. Lochner
E. Rackley, H.W. Lochner
Sean Bloom, CLC
Maxwell Feldman, NHP intern

Survey Date 2016-05-18

Last Observation Date 2016-05-18 **First Observation Date** 2005-04-06

EO Data 2016: 191 plants counted on 18 May 2016 by Bloom in 0.25 acre of monitoring plot; entire sub occurrence delimited in 2016, 0.57acres (Bloom 2016).
2015: 778 plants counted on 19 May 2015 in 0.68 acres of monitoring plots in sub EOs 167, 170, and 176. Estimated 6,400 total plants covering the entire 6.84 acres (Padgett and Feldman 2015).
2014: Padgett counted 797 plants within monitoring plots for principal EO 176 on 20 May 2014 and estimated 8000 plants covering 6.84 acres of mapped area (Padgett 2014).
2013: Monitoring data is part of monitoring data for Principle EO 176 (Padgett 2013). Padgett and Israel counted 413 plants in permanent monitoring plot on 17 July 2013 (Padgett, 2013).
2012: 287 plants counted in permanent monitoring plot by Padgett and Israel on 18 July 2012 (Padgett 2012).
2005: 340 stems over 0.57 acres; seedlings and vegetative reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Seedlings and vegetative reproduction evident (Renninger 2005).

Condition Rating

Size of EO 340 stems over 0.57 acres (Renninger 2005).

Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-19

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Half clearcut; half Mesic Mixed Hardwoods; Associated species include: Carya tomentosa [C. alba], Fagus grandifolia, Fraxinus americana, Quercus alba, Quercus falcata, Quercus rubra, Hexastylis arifolia, Kalmia latifolia, Ligustrum sinense, Polystichum acrostichoides, Tipularia discolor, Carpinus caroliniana, Cornus florida, Ilex opaca (Renninger 2005).

Min. Elevation	1,000.00	**feet**	304.80	**meters**
Max. Elevation	1,000.00	**feet**	304.80	**meters**
Observed Area	0.57	**acres**	0.23	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

Element Occurrence Report

EO ID 21401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57159

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	BROOKS, WILLIAM J and BROOKS, NORETTA JANE, 22	2012 no response
Private individual	Sybil E Walker, 130 Green Meadows Dr, Forest City, NC 280	2012 permission granted, 2015 permission granted, 2016 reminder postcard sent
Private individual	George and Dorothy Allen, 277 PATE RD, RUTHERFORDT	2012 no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/9/2005 12:00:00AM

Element Occurrence Report

EO ID 21401 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57159

Manual File Note All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 6/15/2016 2:54:30PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
SITE	2437.000000 - S.USNCHP*4310
Site_Code	62946
HUC_12	030501050309
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.599096274777
Hectares	0.242446034996
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User BLW **Record Create Date** 5/2/2005 4:18:31PM
Last Modified By JTF **Last Modified Date** 7/27/2016 6:13:30PM
Do Not Exchange N
Last Received Date **Last Received Status**
Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 21400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57151

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 169 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21642 **Parent EO Shape ID** 58,387.00 **Parent EO Number** 176

Site/Directions

Sites

Site ID	Name	Auto-calculated
2437	Davenport Road/Mountain View Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Cleghorn Creek/Stonecutter Creek: US 221, trib NE of Daven Port Rd, near powerline (Sub of 176).
NCDOT TIP: R-2233

Directions

Broad River: Cleghorn Creek/Stonecutter Creek Cleghorn Creek/US 221, tributary north east of Daven Port Road, near powerline cut. This is a sub EO of principal EO 176 (Wichmann 2005). I-74 to US 21 North. Right on Poor's Ford Road; Left on Daven Port Road. Go almost to the end of road (gravel). Plants are downslope to north of road near large powerline crossing (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57151

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28179	2005; Lochner	Cleghorn Creek/US	Line	Estimated	25.00	Meters		1998 aerial photos
89937	Bloom 2016	Davenport Road / M	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57151

Surveyor

Surveyor

Heather Renninger, H.W. Lochner
James Padgett, NHP
B. Dustin, H.W. Lochner
T. Bassette, H.W. Lochner
E. Rachley, H.W. Lochner
E. Galamb, H. W. Lochner
Sean Bloom, CLC

Survey Date 2016-05-18

Last Observation Date 2016-05-18 **First Observation Date** 2005-04-06

EO Data 2016: 35 individuals counted on 18 May 2016. Population re-delinated to higher accuracy polygon in 2016 (Bloom 2016).
2012: Failed to find by Padgett on 21 July 2012 (Padgett 2012).
2005: 42 clumps over 0.39 acres, seedlings and vegetative reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Seedlings and vegetative reproduction evident (Renninger 2005).

Condition Rating

Size of EO 35 individuals counted (Bloom 2016). Failed to find (2012) 42 clumps over 0.39 acres (Renninger 2005).

Landscape Context Powerline right-of-way adjacent to site; invasives have easy access to heartleaf population (Renninger 2005).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2016-05-18

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description MESIC MIXED HARDWOOD FOREST (PIEDMONT SUBTYPE) – This community is found on a west-facing slope above a 1st order tributary. The canopy consists of Fagus grandiflora, Carya tomentosa, Quercus rubra, and Liquidambar styraciflua. The shrub layer includes Kalmia latifolia, Ilex opaca, Amelanchier arborea, Rhododendron periclymenoides, Calycanthus floridus, Cornus florida, Rosa multiflora, and Elaeagnus umbellata. The herbaceous layer includes Mitchella repens, Polystichum acrostichoides, Parathelypteris noveboracensis, Arundinaria gigantea, and Hexastylis heterophylla. (Bloom 2016)
Medium quality; Dry-Mesic Oak-Hickory and Mesic Mixed Hardwood; associated species include: Hexastylis arifolia, Carya tomentosa [C. alba], Quercus falcata, Smilax glauca, Visis sp., Oxydendron arboretum; powerline right-of-way adjacent to site; invasives have easy access to heartleaf population (Renninger 2005).

Min. Elevation	900.00	**feet**	274.32	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	0.39	**acres**	0.16	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

Element Occurrence Report

EO ID 21400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57151

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Brenda and Archer Willis	2012 and 2012 permission to survey granted

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics No rosettes found in the right-of-way as previously indicated by the shapefile. "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/9/2005 12:00:00AM
Manual File Note	This is a sub EO of principal EO 176; all sub EOs are clipped to the principal EO and filed numerically within the Element File (Wichmann 2005).		

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/15/2016 2:21:19PM

Element Occurrence Report

EO ID 21400 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57151

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62946
SITE	2437.000000 - S.USNCHP*4310
HUC_12	030501050309
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	2.24739328767
Hectares	0.909489200005
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 4:15:19PM
Last Modified By	JTF	**Last Modified Date**	8/4/2016 6:14:24PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57149

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 168 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21642 **Parent EO Shape ID** 58,387.00 **Parent EO Number** 176

Site/Directions

Sites

Site ID	Name	Auto-calculated
2437	Davenport Road/Mountain View Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Cleghorn Creek/Stonecutter Creek: tributary NE of Pate Road (sub EO of 176).
NCDOT TIP: R-2233

Directions

Broad River: Cleghorn Creek/Stonecutter Creek: tributary north of Pate Road. This is a sub EO of principal EO 176. "From I-74[?], US 221 North, right on Pears Ford Road (North), Left on Pate Road, Right at the driveway for house # 260. Plants are located along stream on both sides of the driveway" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57149

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68505	Padgett 2012	Davenport Road/M	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Surveyor

Surveyor
Heather Renninger, H.W. Lochner
Tim Bassette, H.W. Lochner
Emily Rackley, H.W. Lochner
Brian Dustin, H.W. Lochner

Element Occurrence Report

EO ID 21399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57149

Survey Date 2005-03-30
Last Observation Date 2005-03-30 **First Observation Date** 2005-03-30
EO Data 2005: 1,113 clumps over 2.35 acres; seedlings and vegetate reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO seedlings and vegetate reproduction evident (Renninger 2005).
Condition Rating
Size of EO 1,113 clumps over 2.35 acres (Renninger 2005).
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2005-03-30
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-mesic Oak Hickory Forest; high quality; Associated species: Lonicera japonica, Euonymus americana, Quercus rubra, Quercus montana, Quercus alba, Carya tomentosa [C. alba], Liriodendron tulipifera, Liquidambar Styraciflua, Acer rubrum, Ligustrum sinense, Cornus florida, Oxydendron arboreum, Hexastylis arifolia (Renninger 2005).

Min. Elevation	980.00	**feet**	298.70	**meters**
Max. Elevation	1,020.00	**feet**	310.90	**meters**
Observed Area	2.35	**acres**	0.95	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).
Topic Keywords

Keywords
IMPACTS
NC DOT

Element Occurrence Report

EO ID 21399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57149

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/9/2005 12:00:00AM
Manual File Note	This is a sub EO of principal EO 176; all sub EOs are clipped to the principal EO and filed numerically within the Element File (Wichmann 2005).		

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	KAI	**Digital Mapping Date**	6/11/2013 2:50:04PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
LATITUDE_DMS	Not processed per agreement with Plaintiff/R Not processed per agreement with Plaintiff/R
HECTARES	0.948481
UTM_EASTING	Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ Not processed per agreement with Plaintiff/Requ
LONGITUDE_DD	
LATITUDE_DD	
ACREAGE	2.343737
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	
HUC_12	030501050309
UTM_ZONE	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
MAPSHEET	40118 - 35081-C8
Site_Code	62946
SITE	2437.000000 - S.USNCHP*4310
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 21399 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57149

Record Create User	BLW	**Record Create Date**	5/2/2005 4:12:23PM
Last Modified By	JTF	**Last Modified Date**	10/14/2015 11:09:09PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21398 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57146

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 167 **Field Office Number**

ID Confirmed

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21642 **Parent EO Shape ID** 58,387.00 **Parent EO Number** 176

Site/Directions

Sites

Site ID	Name	Auto-calculated
2437	Davenport Road/Mountain View Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Cleghorn Creek/Stonecutter Creek, US 221, tributary NW of Davenport Road (sub EO of 176)
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 8 (in part)

Directions

Broad River: Cleghorn Creek/Stonecutter Creek, US 221, tributary located northwest of Davenport Road. This is a sub EO of principal EO 176 (Wichmann 2005). "I-74 to US221 North. Right of Poors Ford Road. Left on Davenport Rd. Go to the end of road. Plants are downslope from house on all sides" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21398 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57146

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Population delineated using GPS (Bloom 2016). GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68206	Padgett 2012	Davenport Road/M	Polygon	Delimited				GPS, 10-meter acc
68207	Padgett EO 167 pl	Davenport Road/M	Polygon	Delimited				GPS, 10-meter acc
89952	Bloom 2016	Broad River: Clegh	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21398 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57146

Surveyor

Surveyor

Heather Renninger, H.W. Lochner
E. Fentress, H.W. Lochner
E. Galamb, H.W. Lochner
B. Dustin, H.W. Lochner
T. Bassette, H.W. Lochner
James Padgett, NCNHP
Sean Bloom, CLC

Survey Date 2005-04-06

Last Observation Date 2005-04-06 **First Observation Date** 2005-04-06

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2016: Bloom re-delinated the population and collected monitoring data in monitoring plots on 20 May 2016 (Bloom). See parent EO 176 for data.
2015: 778 plants counted on 19 May 2015 in 0.68 acres of monitoring plots in sub EOs 167, 170, and 176. Estimated 6,400 total plants covering the entire 6.84 acres (Padgett and Feldman 2015).
2014: Padgett counted 797 plants within monitoring plots for principal EO 176 on 20 May 2014 and estimated 8000 plants covering 6.84 acres of mapped area (Padgett 2014).
2013: Monitoring data is part of monitoring data for principle EO 176 (Padgett 2103).
2012: Padgett counted 367 plants for two permanent monitoring plots on 24 July 2013 (Padgett 2013). Padgett counted 351 plants for two permanent monitoring plots on 21 July 2012 (Padgett).
2005: 3,469 over 5.05 acres, seedlings and vegetative reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Seedlings and vegetative reproduction evident (Renninger 2005).

Condition Rating

Size of EO 3, 469 over 5.05 acres (Renninger 2005).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-19

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Very High quality site; Dry-Mesic Oak-Hickory and Mesic Mixed Hardwood; Associated species: Hexastylis arifolia, Carya tomentosa [C. alba], Carya glabra, Fagus grandiflora, Visis sp., Liriodendron tulipifera, Quercus falcata, Quercus coccinea, Quercus rubra, Hepatica americana, Kalmia latifolia, Rhododendron nudiflorum [R. pariclymenoides], Acer rubrum, Oxydendron arboretum (Renninger 2005).

Min. Elevation	850.00	**feet**	259.08	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	5.05	**acres**	2.04	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

Element Occurrence Report

EO ID 21398 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57146

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments "Worth trying to protect" (Renninger 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Carl Pruett	
Private individual	Williams Family Trust,	2012 letter returned, no forwarding address
Local government	Town of Rutherfordton	2012 no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	Y
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/9/2005 12:00:00AM
Manual File Note	This is a sub EO of principal EO 176; all sub EOs are clipped to the principal EO and filed numerically within the Element File (Wichmann 2005).		

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/16/2016 11:51:42AM

Element Occurrence Report

EO ID 21398 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57146

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62946
SITE	2437.000000 - S.USNCHP*4310
HUC_12	030501050309
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	4.63894613729
Hectares	1.87731779498
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 4:09:13PM
Last Modified By	JTF	**Last Modified Date**	7/27/2016 6:13:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21397 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57144

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 166 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek, Long Branch, tributary 1.7 miles NW of Danieltown and NE 0.3 mile from US 211 (Sub of 177). NCDOT TIP: R-2233 USFWS Flex Fund Monitoring Site 9 (in part)

Directions

Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 mile northwest of Danieltown and northeast 0.3 mile from US 221. This is a sub EO of parent EO 177 (Wichmann 2005). "From I-74, US 221 North, right on Birch Hutchins Road. Left on Iverson Road. Plants are to the east of road along first stream" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 21397 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57144

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B) (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49048	2005; Lochner	Floyds Creek, Long	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21397 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57144

Surveyor

Surveyor

Heather Renninger, H.W. Lochner
Eric Galamb, H.W. Lochner
Tim Bassette, H.W. Lochner
Brian Dustin, H.W. Lochner
Emily Rackley, H. W. Lochner

Survey Date 2005-03-31

Last Observation Date 2005-03-31 **First Observation Date** 2005-03-31

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 9, although it was not surveyed.
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015).
2005: 201 clumps over .75 acres in leaf and flower, seedling and vegatative reproduction evident (Renninger, 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Seedling and vegatative reproduction evident (Renninger, 2005).

Condition Rating

Size of EO 201 clumps over .75 acres in leaf and flower (Renninger, 2005).

Landscape Context Small stream head and Mesic Mixed Forest, adjacent to clear cut area and bisected by a dirt road (Wichmann 2005).

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-03-31

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Small streamhead and Mesic Mixed Hardwood; site is bisected by a dirt road; Hexa nan plant found on both sides of the road. Associated species found in streamhead area include: Osmunda cinnamomea, Thelypteris noveboracensis, Photinia pyrifolia [Aronia arbutifolia], Rhododendron pariclymenoides, Mitchella repens, Medeola virginiana, Osmunda regalis, Woodwardia areaolata, Chamaelirium luteum, Kalmia latifolia, Quercus alba, Smilax rotundifolia, Ilex Af. montana, Quercus falcata, Cornus florida, Prenanthes sp., Polygonatum biflorum, Euonymus americana, Liquidambar styraciflua, Liriodendron tulipifera (several small), Quercus montana, and Prunus serontina; Associated species found in the Mesic Mixed Hardwood area includes: Vitus rotundifolia, Chamaelirium luteum, Liquidambar styraciflua, Liriodendron tulipifera, Prenanthes sp., Prunus serontina, Mitchella repens, Maianthemum racemosum, Acer rubrum, Quercus phellos, and Vaccinium pallidum (Wichmann and Franklin 2005). Mesic Mixed Hardwood; medium quality; associated species: Quercus alba, Acer rubrum, Pinus serotina, Kalmia latifolia, Carya tomentosa [C. alba], Liriodendron tulipifera, Ilex opaca, Oxydendron arboretum, Polystichum acrostichoides, Tipularia discolor, Lonicera sempervirens (Renninger, 2005).

Min. Elevation	960.00	**feet**	292.61	**meters**
Max. Elevation	990.00	**feet**	301.75	**meters**
Observed Area	0.75	**acres**	0.30	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

Element Occurrence Report

EO ID 21397 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57144

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments EO is not located within a Registered/Dedicated Heritage Area, nor managed area (Wichmann 2005). Only Hexa nan population in the Yadkin River Basin; Small stream heads in this area need protection, conversion to peach orchards, ponds, etc. is a threat (Padgett 2005). Streamhead community with Hexa nan is uncommon (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Crowe Family Trust	2012 no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). May incur secondary impacts from Rutherfordton Bypass (NCDOT TIP No. R2233B) (Renninger, 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/21/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/6/2005 12:00:00AM
Manual File Note			

Element Occurrence Report

EO ID 21397 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57144

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/22/2009 8:21:36AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
UTM_NORTHING	[redacted]
ACREAGE	0.749233
LONGITUDE_DD	[redacted]
LATITUDE_DD	[redacted]
UTM_EASTING	[redacted]
LATITUDE_DMS	[redacted]
LONGITUDE_DMS	[redacted]
HECTARES	0.303205
UTM_ZONE	[redacted]
MAPSHEET	40118 - 35081-C8
HUC_12	030501050502
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 4:07:04PM
Last Modified By	JTF	**Last Modified Date**	3/21/2016 6:13:39PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21396 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57142

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 165 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown (Sub of 177).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 9 (in part)

Directions

Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown. This is a sub EO of parent EO 177 (Wichmann 2005). See map for details. "I-74 to US 221 North; left of first paved driveway to left (with green metal gate); site left of driveway in seep just before house (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21396 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57142

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49049	2005; Lochner	Floyds Creek, Lon	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Surveyor

Surveyor
Heather Renninger, H.W. Lochner
T Bassette, H.W. Lochner
E. Rackley, H.W. Lochner
B. Dustin, H.W. Lochner

Element Occurrence Report

EO ID 21396 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57142

Survey Date 2005-04-05
Last Observation Date 2005-04-05 **First Observation Date** 2005-04-05
EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015).
2005: 279 clumps over 0.35 acres in leaf and flower, seedlings and vegetative reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO reproduction evident
Condition Rating
Size of EO 279 clumps over 0.35 acres (Renninger 2005)
Landscape Context Pine plantation - some hardwoods; high quality (Renninger 2005).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2005-04-05
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Pine plantation - some hardwoods; high quality; Associated species: Liriodendron tulipifera, Pinus serotina, Quercus alba, Smilax laurifolia, Pinus teada, Aronia arbutifolia, Smilax laurifolia, Acer rubrum, Cornus florida, Ilex opaca, Carya tomentosa [C. alba], Quercus falcata, Pteridium aquilinum (Renninger 2005).

Min. Elevation	1,090.00	**feet**	332.23	**meters**
Max. Elevation	1,100.00	**feet**	335.28	**meters**
Observed Area	0.35	**acres**	0.14	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Owners interested in protection (Renninger 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Marge and Max Hamrick	828-286-3271

Owner Comments owners interested in protection (Renninger 2005).
Owners did not respond to 2012 letter requesting permission to sruvey.
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 21396 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57142

Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/21/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/22/2009 8:38:54AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21396 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57142

Spatial Attributes

Attribute Name	Attribute Value
UTM_NORTHING	[redacted]
ACREAGE	0.346232
LONGITUDE_DD	[redacted]
LATITUDE_DD	[redacted]
UTM_EASTING	[redacted]
LATITUDE_DMS	[redacted]
LONGITUDE_DMS	[redacted]
HECTARES	0.140116
UTM_ZONE	[redacted]
MAPSHEET	40118 - 35081-C8
WATERSHED	194 - 03050105
HUC_12	030501050502
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 3:59:19PM
Last Modified By	JTF	**Last Modified Date**	3/21/2016 6:14:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21395 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57136

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 164 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek, Long Branch, unnamed tributary 1.2 mile NW of Danieltown (Sub of 177)
NCDOT TIP: R-2233A&B
USFWS Flex Fund Monitoring Site 9 (in part)

Directions

Broad River: Floyds Creek, Long Branch, unnamed tributary about 1.2 road miles north west of Danieltown, just south west of US 221. This is a Sub EO of Parent EO 177 (Wichmann 2005). Ravine southwest of 221 along a tributary located 0.4 mile noth of where US 221 crosses over Long Branch (Wichmann 2005). Shiloh: 1.4 miles northwest of Danieltowm. West of US 221 along a small unnamed stream near the exit ramp of US 74 (Padgett 2005). "From I-74, US 221 South. Immediate right on logging road just north of Visitor Center. Follow road toward I-74 at split. Plants are along first stream" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 21395 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57136

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

This sub EO is located very near EO 164, but the two are separated by US 221 and are therefore treated as two Sub EOs for data organization; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68185	Padgett EO 164 plo	Camp Branch, soutl	Polygon	Delimited				GPS, 10-meter acc
68203	Padgett 2012	Long Branch, south	Polygon	Delimited				GPS, 10-meter acc
89902	Bloom 2016	Floyds Creek, Long	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 21395 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57136

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Surveyor

Surveyor
Heather Renninger, H.W. Lochner
James Padgett, NHP
Brian Dustin, H.W. Lochner
Emily Rackley, H.W. Lochner
Tim Bassett, H.W. Lochner
Kimberly Israel, NHP
Sean Bloom, Catawba Land Conservancy

Survey Date 2016-05-11

Last Observation Date 2016-05-11 **First Observation Date** 2005-03-31

EO Data 2016: 537 plants counted by Sean Bloom in monitoring plots on 11 May 2016. (Bloom 2016).
2015: This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 9, although it was not surveyed. 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 5.21 acres (Padgett and Feldman 2015).
2013: 2012 and 2013 data is part of the status survey monitoring data for Principle EO 177 (Padgett 2013). Padgett and Israel observed 240 plants in a permanent monitoring plot on 7 May 2013 (Padgett 2013).
2012: Padgett counted 204 plants for permant monitoring plot in July 2012 (Padgett 2012).
2005: 657 clumps over 0.6 acres in leaf and flower, seedling and vegetative reproduction evident (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 537 plants in monitoring plots (Bloom 2016). 240 plants in monitoring plots (2013). 657 clumps (Renninger 2005).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2005-03-31

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

Element Occurrence Report

EO ID 21395 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57136

General Description Mesic Mixed Hardwood Forest (Piedmont Subtype) – The slope has a canopy consisting of Liriodendron tulipifera, Quercus montana, Liquidambar styraciflua, and Quercus rubra. Other canopy trees include Prunus serotina and Sassafras albidum. The sub-canopy includes Cornus florida, Nyssa sylvatica, and Ilex opaca. The shrub layer is open but includes Kalmia latifolia, Rhododendron periclymenoides, and saplings of canopy trees. The herbaceous layer was sparse but included Uvularia sp., Mitchella repens, Polystichum acrostichoides, Parathelypteris noveboracensis, Chamaelirium luteum, and Tipularia discolor. (Bloom 2016)
LOW ELEVATION SEEP (TYPIC SUBTYPE) – Found between toe of slope and the tributary. Canopy is primarily Acer rubrum and Liquidambar styraciflua, but includes some Oxydendrum arboreum. The shrub layer includes Calycanthus floridus, Viburnum nudum var. nudum, Ilex montana, Aronia arbutifolia, and Vaccinium corymbosum. The herbaceous layer is dominated by Parathelypteris noveboracensis but also included Osmundastrum cinnamomeum, Osmunda spectabilis, and Lorinseria areolata. Other herbaceous plants that were less prevalent include Arisaema triphyllum and Mitchella repens. (Bloom 2016)
Mesic Mixed Harwood grading into Dry-Mesic Oak-Hickory; medium quality. Adjacent areas extensively logged and/or thinned. Associated species: Quercus alba, Pinus serotina, Liriodendron tulipifera, Ilex opaca, Quercus montana, Carya tomentosa [C. alba], Kalmia latifolia, Ligustrum sinense, Polystichum acrostichoides, Tipularia discolor, Lonicera japonica, and Smilax sp. (Renninger 2005).

Min. Elevation	1,090.00	**feet**	332.23	**meters**
Max. Elevation	1,110.00	**feet**	338.33	**meters**
Observed Area	0.60	**acres**	0.24	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B (Renninger 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	JOSEPH W WRIGHT JR, PO BOX 1331, FLAT ROCK, NC	2012 no response
State/provincial gove	NCDOT US 221	

Owner Comments 38+ acres for sale, 828-429-5831 (Renninger 2005).

OwnerInfo_BCD N

Additional Topics

General Comments Observed threats: Invasive Species (Primarily Rosa multiflora, Lonicera japonica, and Ligustrum sinense) – Found at the western end of the EO. Threat: Moderate / Scope: Low / Immediacy: High (Bloom 2016)

Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B (Renninger 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21395 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57136

References

Reference Code	Full Citation	EO Reference Primary
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/27/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/10/2016 11:47:34AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21395 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57136

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.889244766539
Hectares	0.359865144994
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 3:39:32PM
Last Modified By	JTF	**Last Modified Date**	7/27/2016 6:14:02PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57133

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 163 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek, Long Branch, headwaters near Shiloh (Sub of 177).
NCDOT TIP: R-2233
USFWS Flex Fund Monitoring Site 9 (in part)

Directions

Broad River: Floyds Creek, Long Branch, headwaters northeast of Shiloh. This is a sub EO of parent EO 177 (Wichmann 2005). "From I-74, head north on US 221, turn left on Poors Ford Road (South). Turn left on Woodland Estate. The site is on the left near the end of the road, downslope from the clearcut" (Renninger 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57133

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from H.W. Lochner were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 kilometers of on another and area not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors , and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68184	Padgett 2012	Long Branch, south	Polygon	Delimited				GPS, 10-meter acc
89898	Bloom 2016	Broad River: Floyds	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57133

Surveyor

Surveyor

Heather Renninger, H.W. Lochner
James Padgett, NHP
Eric Galamb, H.W. Lochner
Tim Bassette, H.W. Lochner
Brian Dustin, H. W. Lochner
Emily Rackley, H. W. Lochner
Sean Bloom, Catawba Land Conservancy

Survey Date 2016-05-11

Last Observation Date 2016-05-11 **First Observation Date** 2005-03-30

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2016: This sub occurrence was re-delineated on 11 May 2016 and is 2.38 acres (Bloom 2016).
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015). This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 9, although it was not surveyed.
2005: 657 clumps over 0.83 acres, in leaf and flower, seedlings and vegetative reproduction evident, only a few plants left in clearcut, majority in wetland (Renninger 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 657 clumps, reproduction evident (Renninger 2005).

Landscape Context Wetland/streambank and clearcut; no associated NCHP natural community, medium quality (Renninger 2005).

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-20

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description LOW ELEVATION SEEP (PIEDMONT/MOUNTAIN SPRINGHEAD SUBTYPE – Canopy is primarily Acer rubrum and includes Liriodendron tulipifera, Nyssa sylvatica, and less so Fraxinus pennsylvanica. The sub canopy is primarily Oxydendrum arboretum, Ilex opaca, and Nyssa sylvatica. The shrub layer is predominately Viburnum nudum var. nudum, Amelanchier arborea, Alnus serrulata, Vaccinium corymbosum, and Itea virginica. Much of the shrub layer is bound up with Smilax laurifolia and less often Smilax rotundifolia. The herbaceous layer is dominated by Parathelypteris noveboracensis but also included Arundinaria gigantea, Osmundastrum cinnamomeum, Osmunda spectabilis, and Lorinseria areolata. Other herbaceous plants that were less prevalent include Arisaema triphyllum, Medeola virginiana, and Mitchella repens. (Bloom 2016)
Wetland/streambank and clearcut; no associated NCHP natural community, medium quality; Associated species in wetland/streambank include: Acer rubrum, Liriodendron tulipifera, Ilex opaca, Ligustrum sinense, Smilax laurifolia, oxydendron arboretum, and Arundinaria gigantea; Associated species in clearcut include: Acer rubrum, Carya tomentosa, and Andropogon virginicus (Renninger 2005).

Min. Elevation	1,100.00	**feet**	335.28	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	0.83	**acres**	0.34	**hectares**

Element Occurrence Report

EO ID 21394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57133

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments May incur further impacts from clearcutting due to invasive species (Renninger 2005).

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Mr. Joseph Larry Yelton, 274 Woodland Estates, Rutherfordtc	2012 permission granted, 2015 no response, 2016 reminder postcard mailed
Private individual	Stroud and Conner	2012 no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Observed threats: Invasive Species (Primarily Rosa multiflora, Lonicera japonica, and Ligustrum sinense) – Found at the western end of the EO. Threat: Moderate / Scope: Low / Immediacy: High (Bloom 2016).

Additonal Topics "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). Other threats observed include Incompatible forestry practices and development on adjacent properties, next to the population (Padgett 2012).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05HWL01NCUS	H.W. Lochner personnel. 2005. Letter regarding Hexasylis naniflora survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.	N
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description
NCSU

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 21394 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57133

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	8/4/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/6/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/9/2016 1:47:27PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.9157419742
Hectares	1.17996073499
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 3:31:02PM
Last Modified By	JTF	**Last Modified Date**	8/4/2016 6:14:23PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21393 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57099

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 162 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21677 **Parent EO Shape ID** 58,702.00 **Parent EO Number** 179

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Clark Creek, Miller Branch, tributary E of Catawba Memorial Hospital (Sub of 179) NCDOT non-TIP Division 12 Project at SR 1473 near Miller Branch NCDOT TIP: R-2824

Directions

South Fork Catawba River: Clark Creek, Miller Branch, tributary east of Catawba Memorial Hospital and south of SR 1592. This is a sub EO of Parent EO 179 (Wichmann 2005). "This site is located on a north facing slope on the south side of SR 1473 (8th Avenue) in Catawba County near Miller Branch" (HDR 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21393 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57099

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28167	2005; NCDOT Cor	South Fork Catawba	Polygon	Delimited				1998 aerial photos
90105	2012; NCDOT	Clark Creek, Miller	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005, 2010, 2012

Element Occurrence Report

EO ID 21393 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57099

Surveyor

Surveyor

HRD
HARP
Tim Bassette, NCDOT
Dennis Hermann, NCDOT
Phil May, Carolina Ecosystems
Brian Smith, Carolina Ecosystems
James Pflaum, Carolina Ecosystems

Survey Date 2012-12-17

Last Observation Date 2012-12-17 **First Observation Date** 2005-Fall

EO Data 2012: 21 plants counted on 17 December (Carolina Ecosystems for NCDOT, 2012).
2010: 23 plants counted on 20 December 2010 (Hermann 2010)
2005: 25 plants over 0.04 acres (HDR 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 25 plants over 0.04 acres (HDR 2005).

Landscape Context road side

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-Spring

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description North facing slope...primarily of Mesic Mixed Hardwood Forest...Vegetation includes chestnut oak (Q. prinus), white oak, sourwood, mockernut hickory, red oak, strawberry bush, bellwort (Uvularia sessilifolia), blueberry, sassafras (Sassafras albidum), Solomon's seal (Polygonatum spp.), and smilax...It is possible that Hexastylis (particularly H. naniflora) habitat improves on the north side of SR 1473 as the slope is lower and closer to Miller Branch. However, extensive kudzu (Pueraria spp.) is growing along the road and continues down the slope; no Hexastylis plants were observed. Should the invasive species cross the road, it would be a serious threat to this population (HDR 2005).

Min. Elevation	1,030.00	**feet**	313.94	**meters**
Max. Elevation	1,070.00	**feet**	326.14	**meters**
Observed Area	0.04	**acres**	0.02	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

Element Occurrence Report

EO ID 21393 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57099

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Kudzu growing within the clear-cut north of the site and in the ditch adjacent to the site may significantly alter the habitat if it encroaches from the road (NCDOT 2012).

Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G10DOT02NCUS	Herman, D.W. 2010. Dwarf-flowered Heartleaf, Hexastylis naniflora, Inventory and Monitoring Report. NCDOT Raleigh, NC	N
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 7/15/2016 12:00:00AM
Transcribed By Wichmann **Transcription Date** 6/14/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 7/26/2016 1:28:45PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21393 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57099

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020302
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	0.0517723276203
Hectares	0.0209515499971
WATERSHED	191 - 03050102
MAPSHEET	39024 - 35081-F3
COUNTY	1834 - NCCATA
PARENT_EO_ID	21457

Record Maintenance

Record Create User	BLW	**Record Create Date**	5/2/2005 8:52:02AM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:13:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21389 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57070

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 161 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Hoyle Crk-Micol Crk, Lovelady 1(west): (Sub EO of EO 178). NCDOT TIP: R-2824 SR 1546 Lovelady Road

Directions

Catawba River: Hoyle Creek-Micol Creek, NC DOT Lovelady site 1 (west): This is a sub EO of Parent EO 178 (Wichmann 2005). "This 2.27 acre site is on the south side of the existing Lovelady Road on a moist, steep northwest facing slope that drains toward a tributary to Micol Creek" (HDR 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21389 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57070

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town)greater than 1 kilometer wide and are therefore independent Parent EOs (Wichmann and Franklin 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52939	2009; NCDOT	Hoyle Creek-Micol	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21389 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57070

Surveyor

Surveyor

HDR personnel
HARP personnel
NCDOT personnel
Dennis Herman, NCDOT
Heather Renninger, NCDOT

Survey Date 2009-04-07

Last Observation Date 2009-04-07 **First Observation Date** 2004-Fall

EO Data 2009: Site visted by Herman and Renninger on 07 April 2009; plants present and flowering, no count made (Bassette 2009).
2008: 2,754 plants counted in 2.33 acres by NCDOT staff on 05-06 August 2008. This survey was performed outside of the optimal survey window (Bassette 2009).
2004: 6,123 plants estimated: "Six 1/100 acre plots were used to determine the population count. This site averaged 27000 Hexastylis plants per acre, and 6,123 total." Surveys made in October and November 2004; confirmation of species made in April 2005 by Matthews (HDR 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Medium-high threat from invasive, non-native species: Japanese honeysuckle, mimosa, sericea, and Japanese stilt-grass occur mainly along the dirt road/utility easement at the site (Bassette 2009).

Condition Rating

Size of EO 2,754 counted (2008). Over 6, 000 estimated (HDR 2005).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-08-06

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description ...on a moist, steep northwest facing slope that drains toward a tributary to Micol Creek...The site is dominated by mesic mixed hardwoods consisting of American beech, sweetgum, northern red oak, black oak (Q. velutina), black cherry (Prunus serotina), mockernut hickory, red maple, dogwood, American holly, white oak, sourwood, yellow poplar, mountain laurel, rhododendron, and white pine. Ground cover includes Christmas fern, rattlesnake fern (Botrychium virginianum), partridge berry, smilax, grape, galax, blackberry (Rubus spp.), devil's bit (Chamaelirium luteum), ebony spleenwort (Asplenium platyneuron) and Japanese honeysuckle (HDR 2005).

Min. Elevation	1,030.00	**feet**	313.94	**meters**
Max. Elevation	1,060.00	**feet**	323.09	**meters**
Observed Area	2.27	**acres**	0.92	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Element Occurrence Report

EO ID 21389 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57070

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Dennis Herman (NCDOT) and Heather Renninger (NCDOT) visted this site on 07 April 2009 to confirm the identity of the Hexastylis individuals. Flower morphology was examined in over 200 randomly selected plants and all were consistent H. naniflora characteristics. No evidence of other Hexastylis species was found at this site (Bassette 2009).

Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	3/23/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	3/5/2010 11:50:56AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Element Occurrence Report

EO ID 21389 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57070

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	190 - 03050101
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
ACREAGE	6.931247
HECTARES	2.804987
MAPSHEET	38656 - 35081-G5
HUC_12	030501010801
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User BLW **Record Create Date** 4/28/2005 3:45:29PM

Last Modified By JTF **Last Modified Date** 5/31/2016 9:05:22AM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 21388 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57068

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 160 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Hoyle Crk-Micol Crk, Lovelady 2 (east) (Sub EO of EO 178). NCDOT TIP: R-2824 SR 1546 Lovelady Road

Directions

Catawba River: Hoyle Creek-Micol Creek, NC DOT Lovelady site 2 (east). This is a sub EO of Parent EO 178 (Wichmann 2005).

Locators

Latitude Not processed per ag **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21388 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57068

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

GIS shapefiles were used to create the source feature associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Principal EO 178 is approximately 1.5 air kilometers from principal EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore independent principal EOs (Wichmann and Franklin 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
52940	2009;NCDOT	Hoyle Creek-Micol	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005

Surveyor

Surveyor
HDR personnel
HARP personnel
NCDOT personnel
Ed Smail, Michael Baker Corp.

Element Occurrence Report

EO ID 21388 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57068

Survey Date 2013-05-14
Last Observation Date 2013-05-14 **First Observation Date** 2004-Fall
EO Data 2014: Site visited by Smail on 14 May 2013; plants present but no count reported (Smail 2013).
2009: Site visted by Herman and Renninger on 07 April 2009; plants present and flowering, no count made (Bassette 2009).
2008: 851 plants counted in 1.24 acreas by NCDOT biologists on 05 August 2008. This survey was performed outside of the optimal survey window (Bassette 2009).
2004: 1,484 plants estimated based on 11 1/100 acre sample plots over 1.51 acres. Surveys made in October and November 2004; confirmation of species made in April 2005 by Matthews (HDR personnel 2005, Bassette 2009).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Low-degree threat of invasive species: Japanese hoeysuckle and mimosa present at roadside edges (Bassette 2009).
Condition Rating
Size of EO 851 plants counted (2008). 1,484 plants estimated based on 11 1/100 acre sample plots over 1.51 acres (HDR 2005).
Landscape Context road side, mixed pine hardwood forest

EO Rank A - Excellent estimated viability **EO Origin Subrank**
EO Rank Date 2008-08-05
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).
EO Rank Specifications Version Used

Description

EO Type
General Description ...gentle northeast slope with a mixed pine hardwood forest...Dominant trees include white pine, Virginia pine, shortleaf pine, yellow poplar, sourwood, white oak, mountain laurel, southern red oak (Q. falcata), American holly, red maple, and sassafras. Ground cover includes running-pine (Lycopodium flabelliforme) and rattlesnake fern. (HDR 2005).

Min. Elevation	1,080.00	**feet**	329.18	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	1.51	**acres**	0.61	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

Element Occurrence Report

EO ID 21388 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57068

OwnerInfo_BCD N

Additional Topics

General Comments Dennis Herman (NCDOT) and Heather Renninger (NCDOT) visted this site on 07 April 2009 to confirm the identity of the Hexastylis individuals. Flower morphology was examined in 60-70 randomly selected plants and all were consistent H. naniflora characteristics. No evidence of other Hexastylis species was found at this site (Bassette 2009).

Additonal Topics NCDOT project construction (R-2824) will incur adverse effects (direct and indirect impacts) to 0.0419 acres of the 1.24 acre population, cause a total loss of 118 of 851 plants (Bassette 2009).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
F13CON01NCUS	2013. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/15/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	3/5/2010 11:59:07AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21388 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57068

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010801
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
ACREAGE	3.528631
HECTARES	1.427992
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	38656 - 35081-G5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/28/2005 3:44:40PM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57066

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 159 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21676 **Parent EO Shape ID** 58,661.00 **Parent EO Number** 178

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Hoyle Crk-Micol Crk, Micol Creek tibutary near SR 1547 (Sub EO of 178)
NCDOT TIP: R-2824
NCDOT TIP: B-3621 bridge replacement on SR 1547 over Michol Creek

Directions

Catawba River: Hoyle Creek-Micol Creek, tributary near SR 1547: This is a sub EO of Parent EO 178 (Wichmann 2005). "Site is located on a north-facing slope along SR 1547 in Burke County, NC near Micol Creek" (HDR 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57066

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 178 is approximately 1.5 air kilometers from Parent EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore independent Parent EOs (Wichmann and Franklin 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28151	2005; HDR	Hoyle Creek-Micol	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005

Surveyor

Surveyor
HDR personnel
HARP personnel
Matt Haney, NCDOT

Element Occurrence Report

EO ID 21387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57066

Survey Date 2013
Last Observation Date 2013 **First Observation Date** 2004-Fall
EO Data 2013: plants present but no count reported (NCDOT 2015)
2011: 2182 plants counted on 2 November (NCDOT 2011)
2005: 5,650 plants estimated, based on counts from 15 sample plots 1/100 acres in size established over approximately 2.19 acres; impacts to be determined (HDR personnel 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 5,650 plants estimated (HDR 2005).
Landscape Context "along roadside" and "adjacent to a residence and Micol Creek" (HDR 2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2005-Spr
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description North-facing slope. "Vegetation along these slopes is representative of a Mesic Mixed Hardwood Forest, and is situated adjacent to a residence and Micol Creek. At this site, vegetation transitions from a mixed pine hardwood forest to pine forest as the slope turns to the west. The mixed hardwood forest includes a canopy containing mockernut hickory (Carya tomentosa), yellow poplar (Liriodendron tulipifera), northern red oak (Quercus rubra), and white pine (Pinus strobus). Rhododendron (Rhododendron sp.), mountain laurel (Kalmia latifolia), and sourwood (Oxydendrum arboreum) are prevalent at this site. In addition, an herb and vine layer is present including galax (Galax urceolata), partridge berry (Mitchella repens), and
smilax (Smilax sp.)" (Ref. U05HDR01NCUS).

Min. Elevation	1,080.00	**feet**	329.18	**meters**
Max. Elevation	1,170.00	**feet**	356.62	**meters**
Observed Area	2.19	**acres**	0.89	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Element Occurrence Report

EO ID 21387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57066

Additional Topics

General Comments

Additonal Topics Approximately 5,650 plants estimated prior to NCDOT impacts, number of plants impacted is to be determined (HRD personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F15DOT04NCUS	N.C. Department of Transportation Division 13. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	12/8/2005 2:03:36PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57066

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	190 - 03050101
MAPSHEET	38656 - 35081-G5
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	0.886123
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39022 - 35081-F5
ACREAGE	2.18965
HUC_12	030501010801
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/28/2005 3:42:40PM
Last Modified By	JTF	**Last Modified Date**	10/11/2016 6:19:33PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57060

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 158 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Jacob Fork, Camp Creek, tributary at SR 1115
USFWS Flex Fund Monitoring Site 6
NCDOT non-TIP Division 12 road construction project at SR 1115

Directions

South Fork Catawba River: Jacob Fork, Camp Creek, tributary at SR 1115 "Along the east and west sides of Camp Creek Road" (Bassette 2003). "The site is located on a west facing slope on the east and west sides of SR 1115 in Catawba County" (HDR 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F4	Longview			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57060

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GPS data points were taken to refine mapping in 2016 (Bloom 2016). GPS data points were taken during field surveys to delineate this EO in 2012 (Padgett and Gadd 2012). -- GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species; EO is located within 3.0 kilometers (straight line distance) of EO 058 (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

EO is located within 3.0 kilometers (straight line distance) of EO 058, suitable habitat between EOs 158 and 058 should be searched (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68183	2012; Padgett; EO	Camp Creek, north	Polygon	Delimited				GPS, 10-meter acc
90104	2012; NCDOT	Jacob Fork, Camp C	Polygon	Negligible				GPS, 5-meter accu
89955	Bloom 2016	South Fork Catawba	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005, 2012, 2013, 2014, 2015, 2016

Element Occurrence Report

EO ID 21386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57060

Surveyor

Surveyor

HDR
HARP
Tim Bassette, NC Dept. of Transportation
Jill Holmes, NC Dept. of Transportation
Matt Haney, NC Dept. of Transportation
James Padgett, NHP, 2012, 2013
Laura Gadd, NHP 2012
Sean Bloom, CLC

Survey Date 2016-05-24

Last Observation Date 2016-05-24 **First Observation Date** 2001-05-07

EO Data 2016: 123 plants counted on 24 May 2016 in the entire 0.09 acre re-mapped (Bloom 2016).
2015: 188 plants counted on 14 April 2015 in the entire 0.2 acres mapped (Padgett 2015).
2014: Padgett counted a total of 183 plants in the summer of 2014 (Padgett 2014).
2013: Padgett counted 204 total plants on 16 July 2013 (Padgett 2013).
2012: 556 plants counted on 17 December (NCDOT 2012).
2012: This site was remapped in June of 2012 by James Padgett and Laura Gadd (NHP); James Padgett counted 256 plants on 19 June 2012. The site was timbered (clear cut) early spring of 2012.
2010: 535 total plants counted on 1 December 2010; 312 on the east side of the road and 223 on the west side (Hermann 2010).
2005: -- 334 Hexastylis plants were directly counted on this site; 325 on the east side of SR 1115 and 9 on the west side; plant density calculates to 1392 plants per acre (HDR 2005).
2003: 357 plants counted in 2003 by Tim Bassette, 189 on the west side and 357 on the east side (Hermann 2010).
2001: Approximately 546 plants in two areas: 357 counted over 0.41 ac along the east side of Camp Creek Road; 189 counted over 0.19 ac. along the west side of the road; 7 May 2001(Bassette 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 123 plants (2016), 188 (2015), 183 plants (2014), 204 plants (2013).

Landscape Context road side and "adjacent to areas that have been recently timbered" (HDR 2005).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2016-05-24

EO Rank Comments This EO rank was downgraded from a C rank due to the overall quality of the site (Padgett 2012). -- EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description This site was clear cut in early spring of 2012 (Padgett 2012). -- "The site consists primarily of Mesic Mixed Hardwood Forest...the population found on the east side of SR 1125 is in a more evevated area dominated by white pine and mixed hardwoods...vegetation within this area includes sourwood, American holly (Ilex opaca), red maple (Acer rubrum), white oak (Q. alba), Virginia pine (P. virginiana), white pine, and mountain laurel. The herbaceouse and vine layer include blueberry (Vaccinium spp.), smilax, and grape vine (Vitis spp.).The west side of SR 1115 is lower...Vegetation includes more hardwoods and fewer pines that the east side of hte road. Red oak, American holly, white oak, mountain larurel, red maple, stawberry bush (Euounymus americanus), dogwood (Cornus florida), cranefly orchid (Tipularia discolor), and pipsissiwa (Chimaphila maculata) are common plants. This site is closer to Camp Creek and is moister than that on the east side of the road. Immediately adjacent to this site is an area that have been recently timbered. Portions of this site that are not included in the NCDOT ROW could be threatened by additional timbering activities (HDR 2005).

Element Occurrence Report

EO ID 21386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57060

Min. Elevation	1,060.00	**feet**	323.09	**meters**
Max. Elevation	1,120.00	**feet**	341.38	**meters**
Observed Area	0.20	**acres**	0.08	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments This site has no formal protection and has recently been timbered (Padgett 2012). -- Portions of this site that are not included in the NCDOT ROW could be threatened by additional timbering activities (HDR 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments This site has been timbered and is part of a USFWS multi-year monitoring project (Padgett 2012)

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Ms. Carole Jean Smith, 1498 Camp Creek Rd, Hickory, NC 2	2012, 2015 permission granted to survey

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics NCDOT is responsible for monitoring this population per our agreement with USFWS as stated in the Lovelady Road BO. Much of this population, which includes the east and west side of SR 1115, is outside of the ROW (Hermann 2010). "This non-TIP NCDOT Division 12 road construction project.. may affect all of or portions of [EO 158]...Per a September 22, 2002 conversation with Trish Simon, NC Division 12 Environmentsal Officer, the project is estimated to directly impact approximately 20-30 DFHL plants. Project construction has also been delayed for at least a couple of years" (Bassette 2003).

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57060

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N
G10DOT02NCUS	Herman, D.W. 2010. Dwarf-flowered Heartleaf, Hexastylis naniflora, Inventory and Monitoring Report. NCDOT Raleigh, NC	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	6/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 1:14:50PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21386 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57060

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020202
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requesto
LATITUDE_DD	Not processed per agreement with Plaintiff/Requesto
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requesto
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requesto
UTM_EASTING	Not processed per agreement with Plaintiff/Requesto
UTM_NORTHING	Not processed per agreement with Plaintiff/Requesto
UTM_ZONE	Not processed per agreement with Plaintiff/Requesto
Acreage	0.513844864461
Hectares	0.207945960001
WATERSHED	191 - 03050102
MAPSHEET	39023 - 35081-F4
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/28/2005 3:34:29PM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:13:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57057

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 157 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: Crooked Run Creek, tributary near SR 1519
NCDOT TIP: R-2824
NCDOT Division 12 project at SR 1519

Directions

First Broad River: Crooked Run Creek, tributary near SR 1519. "This site is located on a north facing slope on the east side of SR 1519 in Cleveland County near Crooked Run Creek" (HDR 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D5	Lawndale			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57057

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** Yes

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28149	2004-11-01; HDR, First Broad River: C		Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2004, 2010
Qualitative ground survey	2005

Surveyor

Surveyor
HARP
John Jamison, HDR, Inc.

Element Occurrence Report

EO ID 21385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57057

Survey Date 2010-12-01
Last Observation Date 2010-12-01 **First Observation Date** 2004-11-01
EO Data 2010: 330 plants counted on 1 December 2010 (Hermann 2010)
2005: Jamison et al reported 1,394 plants, calculated based on counts from 10 sample plots 1/100 acres in size established over approximately 1.05 acre on 12 April 2005 (HDR Engineering 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments NCDOT determined this population to be too far away from roadside to be protected in the right-of-way and stopped monitoring this site in 2010 (Bassette 2016).
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 1394 plants calculated based on counts from 10 sample plots 1/100 acres in size established over approximately 1.05 acres (HDR 2005).
Landscape Context road side

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**
EO Rank Date 2005-04-12
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description The site consists primarily of Mesic Mixed Hardwood Forest....on a steep north-facing slope. It is dominated by mixed hardwoods averaging approximately 18 inches in diameter...Dominant vegetation consists of yellow poplar, red maple, white oak, with a moderate herb layer of English ivy, smilax, grape, and Japanese grass (Microstegium vimineum)...small amount of English ivy...(HDR 2005).

Min. Elevation	970.00	**feet**	295.66	**meters**
Max. Elevation	1,020.00	**feet**	310.90	**meters**
Observed Area	1.05	**acres**	0.42	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Associated with NC DOT project B-2119, impacts to be determined; see U05HDR01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments The site boundary is well outside of the ROW. NCDOT is not responsible for the future monitoring of this EO.

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 21385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57057

Additonal Topics Future road paving plans will have no effect of the DFHL population at this site (Hermann 2010). "SR 1519, Div. 12, 1,394 plants estimated prior to NCDOT impacts, number impacted to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
P05JAM02NCUS	Jamison, John R. 2005. Email, Subject: H. naniflora information. 2pp.	N
F16CON01NCUS	2016. Miscellaneous personal communications, field survey forms, and other contributions from sources outside the N.C. Natural Heritage Program.	N
G10DOT02NCUS	Herman, D.W. 2010. Dwarf-flowered Heartleaf, Hexastylis naniflora, Inventory and Monitoring Report. NCDOT Raleigh, NC	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 8/23/2016 12:00:00AM
Transcribed By Wichman **Transcription Date** 5/2/2005 12:00:00AM
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 1:01:19PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 57057

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050606
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	1.04837707532
Hectares	0.42426380499
WATERSHED	194 - 03050105
MAPSHEET	39753 - 35081-D5
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/28/2005 3:24:22PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:47PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21348 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56868

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 154 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Second Broad River: 0.5 miles south of Morrow Creek
Facebook Site
USFWS Flex Fund Monitoring Site 5

Directions

Second Broad River; Facebook site: 0.6 miles south of Morrow Creek. "South of U.S. Highway 74 and Old Caroleen Road. 35 18'53"N, 81 29' 24" (McRae and Beckstrom 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21348 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56868

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Bloom re-delinated this population in 2016 (Bloom 2016). EO rep remapped as part of USFWS multi-year monitoring program. Remapped using GPS data points (Padgett 2012). -- EO rep includes the site surveyed and potential habitat within surveyed areas (Wichmann and Padgett 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

Located approximately 3.0 kilometers from EO 57 (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Plant count and population estimation made during visits to the site in 2012 (Padgett 2012). Count or estimation of individuals needed to better rank this EO (Wichmann 2005). Located approximately 3.0 kilometers from EO 075, suitable habitat between occurrences should be searched (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional Yes **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68181	Padgett 2012	Facebook site, north	Polygon	Delimited				GPS, 10-meter acc
68182	Padgett EO 154 plo	Facebook site, north	Polygon	Delimited				GPS, 10-meter acc
30504	2005; McRae and E	Second Broad River	Point	Delimited				1998 aerial photos
89953	Bloom 2016	Second Broad River	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005
Quantitative ground survey	2012, 2014

Element Occurrence Report

EO ID 21348 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56868

Surveyor

Surveyor

S& ME personnel
Catherine McRae, S&ME
Lisa Beckstrom, S&ME
James Padgett, NHP
Kimberly Israel, NHP
Bryan Tompkins, USFWS
Sean Bloom, CLC

Survey Date 2016-05-18

Last Observation Date 2016-05-18 **First Observation Date** 2005-03-24

EO Data 2016: 288 plants counted by Bloom on 18 May 2016 in 0.53 acre monitoring plot. Estimated 2,576 plants over entire 4.74 remapped acres in 2016 (Bloom 2106).
2015: 348 plants counted on 26 May 2015 in 0.53 acres of monitoring plots. Estimated 5,273 total plants covering the entire 8.03 acres (Padgett 2015).
2014: Padgett counted 324 plants within monitoring plots on 28 May 2014 and estimated 4,909 plants covering 8.03 acres of mapped area (Padgett 2014).
2013: Padgett and Israel counted 353 plants in permanent monitoring plots on 18 July 2013, and estimated the entire population to be 5348 plants covering an area of 8.03 acres (Padgett 2013).
2012: Site revisited in June 2012 by James Padgett and remapped. The site was revisited by James Padgett, Kimberly Israel, and Bryan Tompkins (USFWS) on 16 July, 2012. A permanent plot was installed and plants were counted with an extrapolated estimate of 4773 plants found to occurr on the site (Padgett 2012).
2006: Entire area estimated to contain over 2,500 rosettes in 2006, 160 of which were relocated (on-site) to areas not expected to be impacted from construction. Approximately 12 acres and at least 2,340 plants are to be permanently protected via a deed restriction or conservation easement [C. Wells, USFWS files and S&ME Biological Assessment.]
2005: Number unknown, "along stream corridors throughout the site" on 24 March 2005 (C. McRae and L. Beckstrom 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Fair to good. The population is affected by industrial development, erosion, and runoff.

Condition Rating

Size of EO Estimated population of approximately 3200 plants (Padgett 2012).

Landscape Context Fragmented and immature landscape.

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-26

EO Rank Comments Changed EO rank from E to C based on data collected during site visits in 2012 (Padgett 2012). --EO data not reported with report of occurrence (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Site comprised of several habitat types, including a maintained powerling right-of-way, high quality deciduous wooded area, and disturbed successional areaas; Associated species in high quality woods: Quercus alba, Liriodendron tulipifera, Ilex opaca, Cornus florida, Diospyros virginiana, Carpinus caroliniana, Oxydendron arboreum, Leucothoe axillaris, Kalmia latifolia, Anisostichus capreolatus [Bignonia capreolatus], Polystichum acrostichoides, Mitchella repens, Tipularia discolor, Asplenium platyneuron, Lycopodium flabelliforme, Chimophila maculata, Sanquinaria canadensis, Hepatica americana, Goodyera pubescens (C. McRae and L. Beckstrom 2005).

Min. Elevation	800.00	**feet**	243.84	**meters**
Max. Elevation	930.00	**feet**	283.46	**meters**
Observed Area	5.30	**acres**	2.14	**hectares**

Protection

Element Occurrence Report

EO ID 21348 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56868

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Deed restriction in place with USFWS monitoring the site (Padgett 2012). -- Deed restriction pending as of May 2009 (Bassette 2009). Proposed for development, see U05MCR01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Facebook	2012, 2015 permission granted

Owner Comments Landowner contact: Wayne Hawkins, East Coast Facilities manager, 284 Social Circle, Forest City North Carolina 28043, mobile: 828-755-4563, Desk: 828-247-2710, Wayneh@fb.com
Ms. Rebecca Tucker, 408 Social Circle, Forest City, NC 28043 828-755-4563

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Proposed for development, see U05MCR01NCUS (Wichmann 2005).

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21348 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56868

References

Reference Code	Full Citation	EO Reference Primary
U05MCR01NCUS	McRae, C., and L. Beckstrom. 2005. Letter regarding Protected Species Assessment to U.S. Fish and Wildlife Service, Asheville Field Office, Attention Mr. Brian Cole, Field Supervisor.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F13PAD01NCUS	Padgett, James. 2013. NC NHP field notes from site surveys.	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
F16BLO02NCUS	Bloom, Sean. 2016. Hexastylis naniflora monitoring data collected in 2016 for USFWS Flex Fund Grant.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	4/27/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/16/2016 1:35:56PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21348 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56868

Spatial Attributes

Attribute Name	Attribute Value
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	8.38089279728
Hectares	3.39163222002
WATERSHED	194 - 03050105
MAPSHEET	40119 - 35081-C7
COUNTY	1897 - NCRUTH
HUC_12	030501050406
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/25/2005 3:23:42PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:15:34PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56539

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 151 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Richardson Creek, headwaters S of Shiloh Road and E of Danieltown

Directions

Broad River: Richardson Creek, headwaters south of Shiloh Road and 0.7 air miles east of Danieltown.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56539

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

GIS data from Padgett was used to create the source feature associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is located within 2.0 kilometers of another known EO of the same species, however is separated by unsuitable habitat and not within the same stream drainage (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28144	2004; Padgett	Broad River: Richa	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2002-07-04

Last Observation Date 2002-07-04 **First Observation Date** 2002-07-04

Element Occurrence Report

EO ID 21302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56539

EO Data Between 100-200 estimated plants located along upper middle fork of the headwaters of Richardosn Creek on 4 July 2002 (Padgett 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2002-07-04
EO Rank Comments EO rank based on EO Rank Specs (Padgett 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Plants occuring in a Dry-Mesic Oak-Hikcory Forest community with Quercus alba, Quercus coccinea, Carya ssp., Polystichium acrostichoides, Mitchella repens, Chimaphilia maculata, and Monotropsis uniflora (Padgett 2002).

Min. Elevation	960.00	**feet**	292.61	**meters**
Max. Elevation	980.00	**feet**	298.70	**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56539

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	4/27/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 12:59:05PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	7.40463198194
Hectares	2.99655287507
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/11/2005 11:59:47AM
Last Modified By	LGR	**Last Modified Date**	10/8/2015 11:48:46AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21300 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56536

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 149 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River/Sandy Run Natural Areas: Sandy Run Creek, 1st tributary S of Grog Creek, to the NE (Sub of 100)
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Sandy Run Creek, first unnamed tributary south of Grog Creek and on the northeast side of Sandy Run Creek. NC DOT Broad River Tract Sites A, B, and N. James Padgett's 2001 Site 7. This is a sub EO of Principal EO 100 (Wichmann 2005). In three sub-occurrences along the tributary: A-South, adjacent to Sandy Run Creek; B-Middle, between A and C; C- North, at the headwaters (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 21300 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56536

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30312	2003; NCDOT Cor	Broad River Tract, S	Polygon	Delimited				GPS, 10-meter acc
30313	2003; NCDOT Cor	Broad River Tract, S	Polygon	Delimited				GPS, 10-meter acc
30265	2003; NCDOT Cor	Site N (HARP)	Polygon	Delimited				GPS, 10-meter acc
89588	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89586	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89587	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Element Occurrence Report

EO ID 21300 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56536

Surveyor

Surveyor

James Padgett, ASU
NC DOT Personnel
Jackie Wagner, ASU

Survey Date 2012-05-15

Last Observation Date 2012-05-15 **First Observation Date** 2001

EO Data 2012: 2722 total: 1501 plants counted at Site A, 954 plants counted at Site B and 267 plants counted at Site N by NCDOT biologists on 15 May 2012 (Bassette 2015).
2012: Wagner et. al. observed over 1000 plants on 15 March 2012. Individuals spread out over sub-occurences within 2 km of each other (Wagner 2012).
2008: 1,426 plants total counted by NCDOT biologists at sites A, B in April 2008 and site N on 21 April 2009 (Bassette 2009).
2003: 1,430 individuals observed over 3 sub-occurrences by NC DOT personnel (Bassette 2003).
2001: [sub-occurrence A:]Couple thousand individuals - Estimated 5,000 [over-estimation Padgett, 2005] plus, biggest population seen (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 1,426 plants at all 3 sites (2008/2009). 1,430 observed over 3 sub-occurrences by NC DOT personnel (Bassette 2003). [sub-occurrence A:]Couple thousand individuals - 5,000 plus, biggest population seen (Padgett 2001).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2009-04-21

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Mountain laurel, holly, witch-hazel; Pin and hardwoods, oaks (Bassette 2003). Heath Bluff with plants occurring under Kalmia latifolia and Plystichium acrostichoides along stream and slopes(Padgett 2001).

Min. Elevation	650.00	**feet**	198.12	**meters**
Max. Elevation	800.00	**feet**	243.84	**meters**
Observed Area	6.00	**acres**	2.43	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Occurrence is contained within NC DOT mitigation site, the Broad River Tract; see reference U03BAS01NCUS (Wichmann 2005).

MA/Ownership

Element Occurrence Report

EO ID 21300 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56536

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N
889	Broad River Greenway		Y - Yes	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC DOT	

Owner Comments "Ownership of the Broad River Tract will ultimately be conveyed to Cleveland County, with the Broad River Greenway Association acting as the County's steward to the property" (Bassette 2003).

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/21/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	4/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	4/21/2016 11:55:27AM

Element Occurrence Report

EO ID 21300 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56536

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	6.76315010768
Hectares	2.73695397005
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/11/2005 11:56:46AM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21280 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56435

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 130 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
58	Kross Keys Natural Area	N

Survey Site

Survey Site Name
Kross Keys Natural Area

Directions

Pacolet River: Collinsville Creek, Kross Keys Natural Area. Unnamed branch to Collinsville Creek. Southeastern Polk County; ca. 1.5 miles southeast of Sandy Plains; the site is bounded to the north by SR-1551 (which is just S. of SR 1521), and to the south by SR-1536 (Rayner 1994).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Polk (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35082-B1	Fingerville West			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21280 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56435

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Within 2.0 kilometers of EO 023 but not part of a principal-sub relationship due to the drainages and persistently unsuitable habitat inbetween the 2 EOs (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Within 5.0 kilometers of the South Carolina border (Wichmann 2005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28523	1994; Raynor	Kross Keys Natural	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994, 2005

Surveyor

Surveyor
Doug Rayner, Wofford College
Brenda Wichmann, NCNHP
James Padgett, NCNHP
Misty Franklin, NCNHP

Element Occurrence Report

EO ID 21280 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56435

Survey Date 2005-05-18
Last Observation Date 2005-05-18 **First Observation Date** 1994
EO Data On 18 May 2005, Franklin et al. counted 111 individuals, with likely more present (Franklin et al. 2005). Polk County's largest population (Rayer 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 111 counted, surely many more (Franklin et al. 2005). Polk County's largest population (Rayer 1994).
Landscape Context

EO Rank B? - Possibly good estimated viability **EO Origin Subrank**
EO Rank Date 2005-05-18
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Mesic mixed slope with Liriodendron tulipifera (dominant), Quercus rubra, Quercus alba, Nyssa sylvatica, Fraxinus sp., Ulnus serrulata, Oydendron arboreum, Ilex opaca, Itea virginica, Viburnum nudum, Acer rubrum, Lindera benzoin, Kalmia carolina, Rosa multiflora, Decumaria barbara, Woodwardia areolata, Prunus serotina, Oxypolis rididior, Mikania scandens, Carex spp., Perilla frutescens, Isoetes sp., Asplenium playneuron, Hypericum mutilum, Ranunculus abortivus, Ligustrum sinense, Smilax laurifolia, Carex sp. (rosea group), Hexastylis arifolia, Juniperus virginiana, Verbesina alternifolia, Maianthemum racemosum, Hieracium venosum, Thelypeteris noveboracensis, Parthenocissus quinquefolia, Lonicera japonica, Arisaema triphyllum, Osmunda cinnamomea, Amphicarpaea bracteata, Vaccinium corymbosum, and Rhododendron arborescens; healthy Nestronia umbellula (Franklin et al. 2005).

Min. Elevation	250.00	**feet**	76.20	**meters**
Max. Elevation	270.00	**feet**	82.30	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Element Occurrence Report

EO ID 21280 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56435

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
P05PAD01NCUS	Padgett, James. 2005. Email regarding Hexastylis naniflora EOs, dated 14 April 2005, written to Misty Franklin and Brenda Wichmann.	N
U94RAY01NCUS	Rayner, D.A. 1994. Inventory of the natural areas of the Pacolet Area. Pacolet Area Conservancy and NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 10/1/2015 12:00:00AM

Transcribed By Wichmann **Transcription Date** 4/26/2005 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 1:12:15PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21280 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56435

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	58
SITE	58.000000 - S.USNCHP*1439
PARENT_EO_ID	67672
PARENT_EO_ID	70668
HUC_12	030501051203
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.288604567379
Hectares	0.116794305004
WATERSHED	194 - 03050105
MAPSHEET	40481 - 35082-B1
COUNTY	1891 - NCPOLK

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/11/2005 9:11:49AM
Last Modified By	JLA	**Last Modified Date**	10/6/2015 1:15:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21275 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56420

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 125 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
116	New Hope Springhead Swamp	N

Survey Site

Survey Site Name

Broad River: Mckinney Creek, New Hope Springhead Swamp
USFWS Flex Fund Monitoring Site 3

Directions

Broad River: McKinney Creek, New Hope Springhead Swamp: Southeastern Polk County, near the Rutherford County line; ca. 3/4 mile NNW from Sandy Springs (Rayner 1994).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Polk (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21275 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56420

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO is located within 2.0 kilometers of another EO (EO 124), however is separated by unsuitable habitat, a road, and are not within the same drainage (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Padgett accurately mapped the entire site in 2012. This site is part of a multi-year USFWS monitoring project focusing on the viability of Hexastylis naniflora (Padgett 2012).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

EO is located within 3.0 kilometers from the South Carolina border (Wichmann 2005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68179	Padgett 2012	New Hope Springhe	Polygon	Delimited				GPS, 10-meter acc
68180	Padgett EO 125 plo	New Hope Springhe	Polygon	Delimited				GPS, 10-meter acc
89896	Bloom 2016	Broad River: Mckin	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994, 2005
Quantitative ground survey	2011, 2012, 2013, 2014, 2015, 2016

Element Occurrence Report

EO ID 21275 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56420

Surveyor

Surveyor

Doug Rayner, Wofford College
Misty Buchanan, NHP
Brenda Wichamann
James Padgett, NHP
Kimberly Israel, NHP
Laura Gadd, NHP
Sean Bloom, Catawba Land Conservancy

Survey Date 2016-05-13

Last Observation Date 2016-05-13 **First Observation Date** 1994

EO Data 2016: 973 plants counted by Bloom on 13 May 2016. Estimated 12,235 plants covering the entire 5.03 re-mapped acres (Bloom 2016).
2015: 978 plants counted by Padgett on 29 May 2015 in 0.4 acres of monitoring plots. Estimated 9,707 total plants covering the entire 3.97 acres (Padgett 2015).
2014: Padgett counted 967 plants within monitoring plots on 19 May 2014 and estimated 9,597 plants covering 3.97 acres of mapped area (Padgett 2014).
2013: Padgett and Israel visited monitoring plot and counted 983 plants in permanent plot on 07 July 2013 and estimated the total population size to be approximately 9756 plants (Padgett 2013).
2012: This site was visited and remapped in June of 2012 by James Padgett and Laura Gadd (NHP). The site was visited again in July and a permanent plot was placed in and 950 plants counted with a population estimate of 9429 plants was made by Padgett and Israel on 17 July 2012 (Padgett 2012).
2005: Pagdett estimated 1,500 plants (Padgett et. al 2005).
1994: Raynor noted that it occurs in abundance in 1994 (Rayner 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Very good to excellent overall consition.

Condition Rating

Size of EO Mapped at approximately 4.8 acres.

Landscape Context Good landscape context within the site and EO, but poor once you move away from it.

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-29

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description LOW ELEVATION SEEP (PIEDMONT/MOUNTAIN SPRINGHEAD SUBTYPE – Canopy is primarily Liriodendron tulipifera, but also includes Pinus echinata, Quercus alba, Liquidambar styraciflua, and Acer rubrum. The sub canopy is primarily Acer rubrum and Nyssa sylvatica. The shrub layer is predominately Ilex opaca, Kalmia latifolia, Viburnum nudum var. nudum, and Calycanthus floridus. Other shrubs found throughout are Amelanchier arborea, Vaccinium corymbosum, Rhododendron periclymenoides, Xanthorhiza simplicissima, and Itea virginica. Along the drier edges of the seep are individuals of Asimina triloba. Much of the shrub layer is bound up with Smilax laurifolia and less often with Smilax rotundifolia, Muscadinia rotundifolia, and Parthenocissus quinquefolia. The herbaceous layer is dominated by Parathelypteris noveboracensis, Osmundastrum cinnamomeum, Osmunda spectabilis, but also includes Polystichum acrostichoides, Viola primulifolia, Viola sororia, Arundinaria gigantea Lorinseria areolate, Arisaema triphyllum, Sagittaria latifolia, Medeola virginiana, Mitchella repens, and Microstegium vimineum. (Bloom 2016)
Boggy seep in low woods along stream with Thelypteris noveboracensis, Ilex opaca, Liquidambar styraciflua, Calycanthus floridus, Xanthorhiza simplicissima, Itea virginica, Euonumus americana, Medeola virginiana, Rhododendron pariclymenoides, Smilax rotundifolia, Quercus alba, Lirodendron tulipifera, Viburnum nudum, Arundinaria sp., Kalmia carolina, Osmunda cinnamomea, and Aronia arbutifolia (Franklin et al. 2005). Springhead swamp (Rayner 1994).

Element Occurrence Report

EO ID 21275 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56420

Min. Elevation	270.00	**feet**	82.30	**meters**
Max. Elevation	300.00	**feet**	91.44	**meters**
Observed Area	4.80	**acres**	1.94	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments A portion of this site now has formal protection as a Registered Heritage Area (RHA). (Padgett 2013).
This site as no formal protection but at least one landowner has expressed and interest in protecing his portion of this site (Padgett 2012).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2334	New Hope Springhead Swamp (Barefield) RHA		N - No	N

More Management Y - Yes

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		
Private individual	Danny Barefield, 864 Tanner Rd, Rutherfordton, NC 28139	2012, 2015 permission granted to survey, 2016 reminder postcard sent

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments The area around the monitoring plot is an intact and high quality natural community. However, impacts at the eastern end of the EO are causing some habitat degradation. The shrub layer is becoming heavily invaded by Ligustrum sinense and the herbaceous layer is quickly getting invaded by Microstegium vimineum. Additionaly a cleared hunting lane at the eastern end of the occurrence is of low severity and scope and of high immediacy (Bloom 2016).

Additonal Topics Threats observed: Invasive species (Ligustrum sinense and Microstegium vimineum) found at the eastern end of the EO and introduced by an old road cut. A cleared hunting lane also is a low threat to the population (Bloom 2016).

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 21275 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56420

References

Reference Code	Full Citation	EO Reference Primary
P05PAD01NCUS	Padgett, James. 2005. Email regarding Hexastylis naniflora EOs, dated 14 April 2005, written to Misty Franklin and Brenda Wichmann.	N
U94RAY01NCUS	Rayner, D.A. 1994. Inventory of the natural areas of the Pacolet Area. Pacolet Area Conservancy and NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	8/4/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	4/26/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	6/9/2016 11:31:21AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21275 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56420

Spatial Attributes

Attribute Name	Attribute Value
Acreage	5.12422770246
Hectares	2.07370458002
WATERSHED	194 - 03050105
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requesto
LATITUDE_DD	Not processed per agreement with Plaintiff/Requesto
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requesto
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requesto
UTM_EASTING	Not processed per agreement with Plaintiff/Requesto
UTM_NORTHING	Not processed per agreement with Plaintiff/Requesto
UTM_ZONE	Not processed per agreement with Plaintiff/Requesto
MAPSHEET	40482 - 35081-B8
COUNTY	1891 - NCPOLK
Site_Code	116
SITE	116.000000 - S.USNCHP*1437
PARENT_EO_ID	67672
PARENT_EO_ID	70668

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/11/2005 8:56:28AM
Last Modified By	JTF	**Last Modified Date**	8/4/2016 6:14:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21274 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56418

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 124 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
1788	Sandy Springs Church Springhead Swamp	N

Survey Site

Survey Site Name
Sandy Springs Church Springhead Swamp

Directions

Sandy Springs Church Springhead Swamp. "Southeastern Polk County; ca one mile W 10 N from Sandy Springs (at the jct. of SR-1343 and SR-1101)" (Rayner 1995).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Polk (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21274 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56418

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is located within 2.0 kilometers of another EO (EO 125), however is separated by unsuitable habitat, a road, and are not within the same drainage (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Approximately 2.0 Kilometers north of the NC-SC line (Wichmann 2005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28519	2005-05-18; Frankl	Sandy Springs Chu	Point	Estimated	25.00	Meters		GPS, 3-meter accu
28520	2005-05-18; Frankl	Sandy Springs Chu	Point	Estimated	25.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994

Element Occurrence Report

EO ID 21274 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56418

Surveyor

Surveyor

Doug Rayner, Wofford College
Franklin
Wichmann
Padgett

Survey Date 2005-05-18

Last Observation Date 2005-05-18 **First Observation Date** 1994

EO Data 20 plants counted by Franklin, Padgett, and Whichman on 18 May 2005, probably many more; very healthy plants (Franklin et al. 2005). Site harbors a good population (Rayner 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank D? - Possibly poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-18

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Piedmont Boggy Streamhead with Carex atlantica, C. debilis, and species typical of the Coastal Plain; Vinca minor from upslope invading and seemingly competing with Hexastylis naniflora plants (Wichmann et al. 2005). Springhead swamp (Rayner 1994).

Min. Elevation	820.21	**feet**	250.00	**meters**
Max. Elevation	1,017.06	**feet**	310.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments This "bog" is about 1/5 of the previous size [1994] and has been degraded, site has been impacted by some draining and soil movement, flags from a wetland delineation noted (Franklin et al. 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments Vinca minor invading from upslope, competing with Hexastylis naniflora plants (Wichmann et al. 2005).

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

Element Occurrence Report

EO ID 21274 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56418

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
P05PAD01NCUS	Padgett, James. 2005. Email regarding Hexastylis naniflora EOs, dated 14 April 2005, written to Misty Franklin and Brenda Wichmann.	N
U94RAY01NCUS	Rayner, D.A. 1994. Inventory of the natural areas of the Pacolet Area. Pacolet Area Conservancy and NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 12/4/2015 12:00:00AM

Transcribed By Wichmann **Transcription Date** 4/26/2005 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By BLW **Digital Mapping Date** 7/5/2005 9:10:28AM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21274 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 56418

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501051501
ACREAGE	0.965458
Site_Code	1788
SITE	1788.000000 - S.USNCHP*1349
WATERSHED	194 - 03050105
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
HECTARES	0.390708
LONGITUDE_DD	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
MAPSHEET	40482 - 35081-B8
COUNTY	1891 - NCPOLK
PARENT_EO_ID	67672
PARENT_EO_ID	70668

Record Maintenance

Record Create User	BLW	**Record Create Date**	4/11/2005 8:54:24AM
Last Modified By	LGR	**Last Modified Date**	12/4/2015 5:09:14PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 21053 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 55184

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 122 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & NE of US 221 (sub of 177).
NCDOT TIP: R-2233

Directions

Broad River: Floyds Creek, Long Branch, unnamed tributary about 0.3 mile south east of Huntley Church on the north east side of US 221. This is a sub EO of principal EO 177 (Wichmann 2005). Shiloh: US 221, 1 mile north of US 74, unnamed tributary to Long Branch of Floyds Creek; located in a thin band along stream bank in most areas, on both sides [includes EO 107] of US 221 (Renninger 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 21053 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 55184

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Shape file from H.W. Lochner used to create the source polygon associated with this EOR (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This sub EO is located within the same ravine as EO 107 but is separated by US 221 and is therefore considered a separate sub EO; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
27457	2005; Padgett	Long Branch, unnar	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003
Quantitative ground survey	2005

Element Occurrence Report

EO ID 21053 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 55184

Surveyor

Surveyor

Heather Renninger, HW Lochner
H W Lochner personal
James Padgett, NHP

Survey Date 2008

Last Observation Date 2008 **First Observation Date** 2003-04-29

EO Data 2008: 123 plants counted by NCDOT in 2008 (NCDOT 2009).
2005: Combined with sub EO 107, there were 554 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 250 clumps occurring over approximately 1 acre [includes EO 107] (Renninger 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Invasives thick in some areas (Fontaine 2009).

Condition Rating

Size of EO Combined with sub EO 107, there were 554 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007). Less than 250 (Renninger 2003).

Landscape Context

EO Rank B? - Possibly good estimated viability **EO Origin Subrank**

EO Rank Date 2007-01-11

EO Rank Comments EO rank elevated to reflect quantitative data and EO specs (Padgett 2007).

EO Rank Specifications Version Used

Description

EO Type

General Description Dry-mesic Oak-hickory Forest grading to a Mesic-mixed hardwood forest (Piedmont-subtype); medium quality, disturbed by invasives and historic dumping (Renninger 2005).

Min. Elevation	990.00	**feet**	301.75	**meters**
Max. Elevation	820.00	**feet**	249.94	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** Y - Yes

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

Element Occurrence Report

EO ID 21053 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 55184

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). Likely to be impacted by the widening of US 221 (Wichmann 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/4/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	4/11/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	LGR	**Digital Mapping Date**	10/14/2014 2:16:54PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 21053 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 55184

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1897 - NCRUTH
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.350778421656
Hectares	0.141955209994
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8

Record Maintenance

Record Create User	BLW	**Record Create Date**	3/15/2005 11:44:38AM
Last Modified By	JTF	**Last Modified Date**	11/4/2015 11:14:58PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20354 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48869

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 121 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Dills Creek, unnamed tributary west of the creek (Sub EO of EO 099). USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Dills Creek, small unnamed tributary on the west side of Dills Creek. This is a sub EO of parent EO 099 (Wichmann 2005). From Harris, travel 2 miles southwest on State Road 1111. Turn north on State Road 1122 and continue 1.46 miles. The occurrence is located approximately .5 miles south of State Road 1122, on the south side of a field and woods.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20354 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48869

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This is a sub EO of principal EO 099; all sub EOs are located within 2.0 kilometers of one another and are not separated by an areas of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68197	Padgett 2012	Dills Creek, northea	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type **EO Survey Note**

Qualitative ground survey

Surveyor

Surveyor

James Padgett, NHP

Survey Date 2004-05-15

Last Observation Date 2004-05-15 **First Observation Date** 2004-05-15

Element Occurrence Report

EO ID 20354 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48869

EO Data 2004: Estimated over 300 clumps observed. The EO extends approximately 75 feet along the stream channel and lower slopes; vegetative and flowering individuals, as well as seedlings observed on 27 May 2004 (Padgett 2004).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Vegetative and flowering individuals, as well as seedlings observed on 27 May (Padgett 2004)

Condition Rating

Size of EO 300+ clumps observed extending approximately 75 feet along the stream channel (Padgett 2004).

Landscape Context Surrounded by woods (Wichmann 2005, based on 1998 aerial images).

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2004-05-15

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Topographic position: lower slope. Moisture regime: moist. Light: filtered. Associated species include Kalmia latifolia, Quercus alba, Castanea dentata, Mitchella repens, Rhododendron nudiflorum, Quercus coccinea, and several species of fern (Padgett 2004).

Min. Elevation	210.00	**feet**	64.01	**meters**
Max. Elevation	240.00	**feet**	73.15	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Logging is a potential threat to this population (Padgett 2004).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments No known management plan is in place (Padgett 2004).

Ownership

Owner Type	Owner Name	Owner Note
Private individual	KLH Acquisitions (Chris Robbins 2012)	2012 no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 20354 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48869

Boundaries Y - Yes **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.	Y
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/18/2016 12:00:00AM
Transcribed By	M. Franklin	**Transcription Date**	8/12/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	M. Franklin	**Paper Mapping Date**	8/12/2004 12:00:00AM
Digital Mapping By	KAI	**Digital Mapping Date**	6/11/2013 12:49:14PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40482 - 35081-B8
HUC_12	030501050501
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
ACREAGE	0.511791
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	0.207115
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 20354 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48869

Record Create User	MAF	**Record Create Date**	8/12/2004 3:04:20PM
Last Modified By	JLA	**Last Modified Date**	3/18/2016 4:13:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48859

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 118 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2198	Big Island Carolina Hemlock Bluff	N

Survey Site

Survey Site Name
Big Island Carolina Hemlock Bluff and Natural Area

Directions

Big Island Carolina Hemlock Bluff and Natural Area. 0.2 miles north of SR 1126 (Stacey Road), 0.6 miles directly east of the Rutherford/Polk County line; population lies along unnamed stream 0.1 mi south of the Broad River.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48859

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This occurrence is 2km away from parent EO 99. Justification needed for separation.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited Y

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
25092	2004-08-06; Padget	Big Island Carolina	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Qualitative ground survey

Surveyor

Surveyor

James Padgett, NCNHP

Survey Date 2004-08-06

Last Observation Date 2004-08-06 **First Observation Date** 2004-08-06

EO Data James Padgett observed an estimated 500 vegetative and flowering individuals, with seedlings present on 06 August 2004 (Padgett 2004).

Element Occurrence Report

EO ID 20352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48859

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Population extends approximately 200 meters along the stream and adjacent slopes (Padgett 2004).
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2004-08-06
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Topographic position: lower slope. Moisture regime: moist. Light: filtered. Associated species include Kalmia latifolia, Quercus alba, Mitchella repens, Rhododendron nudiflorum, Quercus coccinea, and several species of fern (Padgett 2004).

Min. Elevation	787.40	**feet**	240.00	**meters**
Max. Elevation	787.40	**feet**	240.00	**meters**
Observed Area	4.00	**acres**	1.62	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries Y - Yes **Image** N

Element Occurrence Report

EO ID 20352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48859

References

Reference Code	Full Citation	EO Reference Primary
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.	Y
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	9/30/2015 12:00:00AM
Transcribed By		**Transcription Date**	8/12/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	M. Franklin	**Paper Mapping Date**	8/12/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 11:11:53AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reque
LATITUDE_DD	Not processed per agreement with Plaintiff/Reque
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reque
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reque
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
Acreage	4.7155494038
Hectares	1.90831808495
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
Site_Code	51512
SITE	2198.000000 - S.USNCHP*3089
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945

Record Maintenance

Element Occurrence Report

EO ID 20352 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48859

Record Create User	MAF	**Record Create Date**	8/12/2004 2:48:14PM
Last Modified By	JLA	**Last Modified Date**	10/8/2015 1:04:54PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48838

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 117 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

First Broad River: Knob Creek, Leeman Gap (parent EO, includes sub EOs 083 & 084)

Directions

First Broad River: Knob Creek, Leeman Gap. This is a parent EO including two sub EOs: 083 and 084 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48838

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO8 is 3km to the east and is in the same river basin; Parent EO101 is 2.5km to the north and in the Catawba River Basin (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

ID of sub EOs has not been confirmed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
25090	Parent EO 117	First Broad River: K	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 20351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48838

Survey Date 2003-03-21
Last Observation Date 2003-03-21 **First Observation Date** 2003-03-21
EO Data This is a parent EO of two sub EOs: 083 and 084 (Wichmann 2005). See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 2003-03-21
EO Rank Comments ID of Sub EOs not confirmed (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20351 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48838

References

Reference Code	Full Citation	EO Reference Primary
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/25/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/30/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/25/2015 9:09:26AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050605
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	12.3733987503
Hectares	5.00734455
WATERSHED	191 - 03050102
WATERSHED	194 - 03050105
MAPSHEET	39389 - 35081-E5
COUNTY	1839 - NCCLEV
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	MAF	**Record Create Date**	8/12/2004 11:22:53AM
Last Modified By	JLA	**Last Modified Date**	10/14/2015 11:42:33AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20334 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48581

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 115 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and S of SR 2125 (Sub of 247).

Directions

Broad River: Floyds Creek, unnamed tributary east of US 221 and south of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). In two locations: (A) East side of US 221 south of SR 2125 along creek in woods north of dog pens at residence, creek is unnamed tributary of Floyds Creek; and (B) East side of US 221 south of SR 2125 in back yard of trailer by unnamed tributary of Floyds Creek, westernmost location (Roeder 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20334 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48581

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shape file submitted with report of occurrence used to digitize the source polygons that comprise the EO associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
27319	2003; K. Roeder, H	Site A, Floyds Cree	Polygon	Delimited				1:24,000 topos (pa
28557	2005; HWLochner,	Site B, Floyds Cree	Line	Estimated	25.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2003, 2005

Surveyor

Surveyor
Ken Roeder, W.H. Lochner Inc.
James Padgett, NHP

Element Occurrence Report

EO ID 20334 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48581

Survey Date 2005-04
Last Observation Date 2005-04 **First Observation Date** 2003-05-05
EO Data 2005: Combined with sub EO 114, there were 133 clumps observed and counted in April 2005 by HWLochner, Inc. and Padgett (Padgett 2007).
2003: 75 clumps total, in two sub-occurrences: (A) 25 individual clumps over 0.054 acres, in leaf and flower, clonal/vegetative evidence of reproduction; (B) 50 individual leaf, clump over 0.039 acres, in leaf and flower, clonal/vegetative evidence of reproduction (Roeder 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 133 clumps observed and counted in sub EO's 114 and 115, separated by US 221, in April 2005 by H W Lochner and Padgett (Padgett 2007). 75 clumps total (Roeder 2003).
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2007-01-11
EO Rank Comments EO rank upgraded from a D to a C based on quantitative data and EO Specs (Padgett 2007).

EO Rank Specifications Version Used

Description

EO Type
General Description (A) Habitat is of poor quality due to local residence; Associated species, yellow poplar and red maple; Topographic position, lower slope - alluvial; Micro-releif, flat drop-off; Moisture regime, seasonally wet; shaded (B) Habitat is of poor quality due to local residence, some naniflora in mowed areas of yard near creek; Associated species, yellow poplar, red maple and lawn; Topographic position, lower slope - alluvial; Micro-releif, flat convex; Moisture regime, moist to seasonally wet; filtered sun/shade (Roeder 2003).

Min. Elevation	230.00	**feet**	70.10	**meters**
Max. Elevation	240.00	**feet**	73.15	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes
Management Comments Speak with landowner to advise of protected status (mowing plants) (Roeder 2003).

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments
OwnerInfo_BCD N

Additional Topics

Element Occurrence Report

EO ID 20334 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48581

General Comments

Additonal Topics "Some naniflora in mowed area of yard near creek" (Roeder 2003). "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
LANDOWNER
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F05NHP02NCUS	NHP Staff, 2005 field survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	8/24/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	3/9/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 10:34:39AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	2.25329074502
Hectares	0.911875820005
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 20334 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48581

Record Create User	CDD	**Record Create Date**	8/4/2004 2:41:55PM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20333 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48578

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 114 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and N of SR 2125 (sub EO of 247)
NCDOT TIP: R-2233

Directions

Broad River: Floyds Creek near Harris, unnamed tributary east of US 221 and north of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). Along east side of Hwy 221, 0.2 miles north of intersection with State Road 2125. "east side of US 221, 300 feet south of Floyd's Creek, on an unnamed tributary to Floyd's Creek" (Renninger 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20333 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48578

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shape file submitted with report of occurrence was used to digitize the source polygons that comprise the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This EO is located less than 0.1 km away from EO 174, the two occurrences are separated by road and are therefore treated as sub EOs of the same Parent EO; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28190	2014; NCNHP	Floyds Creek near I	Polygon	Delimited				2012 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2003

Surveyor

Surveyor
Susan Smith, H.W. Lochner
Ken Roeder, H.W. Lochner

Element Occurrence Report

EO ID 20333 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48578

Survey Date 2010-01-27
Last Observation Date 2010-01-27 **First Observation Date** 2003-05-03
EO Data 2010: 14 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).
2004 to 2008: 133 plants over 0.05 acres observed by NCDOT biologists [date unknown - after 2003 and before December 2008] (Fontaine 2009 - Biological Assessment).
2003: 25 individual clumps over 0.054 acres in leaf and flower with clonal/vegetative evidence of reproduction (S. Smith 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Area impacted by mowing and trampling (Fontaine 2009).
Condition Rating
Size of EO 25 individuals (S. Smith 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-05-03
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Mesic mixed hardwood with Osmunda cinnamomea, Polysticum acrostichoides, Liriodendron tulipifera, and Acer rubrum; Pacolet soils, fairly undisturbed area, but lots of Kudzu nearby (S. Smith 2003).

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 20333 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48578

Additonal Topics 0.020 acre and 52 plants to be directly affected and 0.040 acre and 106 plants to be indirectly affected by this project [the total number of impacted plants exceeds the number of plants reported for the site] (Fontaine 2009 - see Biological Assessement). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 221 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/4/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	8/8/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	BLW	**Digital Mapping Date**	5/2/2005 5:02:12PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 20333 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48578

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050502
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	.03
Hectares	.0109
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Not processed per agreement with Plaintiff/Requester

Record Maintenance

Record Create User	CDD	**Record Create Date**	8/4/2004 2:39:07PM
Last Modified By	JTF	**Last Modified Date**	11/4/2015 11:14:58PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48577

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 113 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22403 **Parent EO Shape ID** 63,307.00 **Parent EO Number** 245

Site/Directions

Sites

Site ID	Name	Auto-calculated
2439	Floyds Creek Tributary Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: Floyds Creek Tributary Rare Plant Site (west)) (Sub of 245)
NCDOT: TIP R-2824
NCDOT TIP: R-2233

Directions

Broad River: Floyds Creek Tributary Rare Plant Site (west). This is a Sub EO of Parent EO 099 (Wichmann 2005). 1.5 road miles north of the Broad River on the west side of US 221(Wichmann 2005)."West of US 221; approximately 1500' south of intersection of US 221 and SR 2109; along mostly north to northwest-facing banks of an unnamed tributary to Floyd's Creek" (Renninger 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48577

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This sub EO is located in the same ravine as sub EO 175 but is separated by US Hwy 221; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
25049	2003; NCDOT Cor	Broad River: Floyds	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003
Quantitative ground survey	2005

Element Occurrence Report

EO ID 20332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48577

Surveyor

Surveyor

Heather Renninger, H.W. Lochner
Emily Fentress, H.W. Lochner
James Padgett, NHP

Survey Date 2010-01-27

Last Observation Date 2010-01-27 **First Observation Date** 2003-05-15

EO Data 2010: 7 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).
2005: Combined with EO 175 located just across US 221, there were 1175 plants observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 150 clumps over 3.005 acres; in leaf and flower (HW Lochner personnel 2005).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Some invasives present; evidence of past cattle impacts (Fontaine 2009).

Condition Rating

Size of EO 1175 plants observed and counted in this sub EO and sub EO 175 on April 2005 by H W Lochner and Padgett (Padgett 2007). Approximately 150 clumps over 3.005 acres; in leaf and flower (HW Lochner personnel 2005).

Landscape Context roadside

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2007-01-11

EO Rank Comments EO rank changed due to size of population in regards to EO Specs (Padgett 2007). EO rank is based on EO Rank Specs for this species and EO data for each sub EO, when taken together (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	840.00	**feet**	256.03	**meters**
Max. Elevation	860.00	**feet**	262.13	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments

Element Occurrence Report

EO ID 20332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48577

Ownership

Owner Type	Owner Name	Owner Note
Private organization		

Owner Comments Partially (upper slopes and pine plantation) owned by Loblolly Hunting Club (recognized by NCWRC)

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics 62 plants and 0.374 acres of this EO and EO 175 expected to be directly impacted and 123 plants and 0.744 acres expected to be indirectly impacted by this project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). "May be impacted by widening of US221; trampling by cattle west of US221 (approximately 1000' from road)" (Renninger 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/4/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	4/27/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/25/2015 10:11:44AM

Element Occurrence Report

EO ID 20332 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48577

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	5.0891007136
Hectares	2.05948917003
Site_Code	62948
SITE	2493.000000 - S.USNCHP*4588
SITE	2439.000000 - S.USNCHP*4312
Site_Code	65945

Record Maintenance

Record Create User	CDD	**Record Create Date**	8/4/2004 2:38:09PM
Last Modified By	JTF	**Last Modified Date**	3/23/2016 6:12:46PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48409

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 107 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & SW of US 221 (sub of 177).
USFWS Flex Fund Monitoring Site 9 (in part)
NCDOT R-2233 A and B

Directions

Broad River: Floyds Creek, Long Branch, unnamed tributary 0.3 mile south east of Huntley Church on the south west side of US 221. This is a sub EO of parent EO 177(Wichmann 2005). Shiloh: US 221, 1 mile north of US 74, unnamed tributary to Long Branch of Floyds Creek; located in a thin band along stream bank in most areas, on both sides [includes EO 122] of US 221 (Renninger 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48409

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles submitted with report of occurrence (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

This sub EO is located within the same ravine as EO 122 but is separated by US 221 and is therefore considered a separate sub EO; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
25044	2003-04-29; Renni	Broad River: Floyds	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003
Quantitative ground survey	2005

Element Occurrence Report

EO ID 20302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48409

Surveyor

Surveyor

James Padgettt, NHP
Heather Renninger-H.W.Lochner Inc.
NCDOT personnel

Survey Date 2008

Last Observation Date 2008 **First Observation Date** 2003-04-29

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2015: 241 plants counted on 19-20 May in 0.24 acres of monitoring plots for sub EOs 016, 107, 163, 164, 165, and 166. Estimated 2360 total plants covering the entire 2.35 acres (Padgett and Feldman 2015).
2012: Wagner et. al. counted over 100 plants on 15 March 2012. (Wagner 2012).
2008: 239 plants counted by NCDOT in 2008 (NCDOT 2009, Fontaine 2009).
2005: Combined with sub EO 122, there were 554 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007).
2003: Approximately 250 clumps occurring over approximately 1 acre [includes EO 122] (Renninger 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Invasives thick in some areas (Fontaine 2009).

Condition Rating

Size of EO 554 clumps observed and counted in April 2005 by H W Lochner and Padgett (Padgett 2007). Less than 250 clumps (Renninger 2003).

Landscape Context Road side, develpment (Wichmann 2005).

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-20

EO Rank Comments EO rank raised to reflect quantative data and EO specs (Padgett 2007). EO rank based on EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Dry-mesic Oak-hickory Forest grading to a Mesic-mixed hardwood forest (Piedmont-subtype); medium quality, disturbed by invasives and historic dumping (Renninger 2005).

Min. Elevation	990.00	**feet**	301.75	**meters**
Max. Elevation	1,120.00	**feet**	341.38	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Element Occurrence Report

EO ID 20302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48409

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Timken Inc.	2012 permission letter, no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.

Additonal Topics 127 plants and 0.196 acres expected to be directly impacted and 61 plants and 0.095 acres expected to be indirectly impacted by this road project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 211 widening (R-2233AandB) to be determined" (HDR personnel 2005). "May be impacted by the widening of US 221" (Renninger 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	Y
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description
UNC Herbarium

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/18/2016 12:00:00AM
Transcribed By	CDD	**Transcription Date**	8/9/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	8/9/2004 12:00:00AM
Digital Mapping By	LGR	**Digital Mapping Date**	10/14/2014 2:16:53PM

Element Occurrence Report

EO ID 20302 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48409

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.611108234163
Hectares	0.247307109999
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/29/2004 2:20:47PM
Last Modified By	JTF	**Last Modified Date**	3/18/2016 6:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20301 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48407

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 106 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated
2438	New Bethel Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: New Bethel Plant Site (sub of 247).
Tate Conservation Easement Transplant site
NCDOT TIP: 2233 A and B

Directions

Broad River: Floyds Creek near Harris, unnamed tributary just east of US 221 and just north of the Clinchfield Railroad. This is a sub EO of Parent EO 247 (Wichmann 2005). Two sub-occurrences ([A] and [B]): [A], ravine just northeast of US 221, approximately 0.2 mile north of the Clinchfield Railroad (Wichmann 2005); "I-74 to US 221 south; travel south just past Jayne's Road, plants are in low area to east of 221" (Renniger 2005). [B], "Along and unamed tributary to Floydes Creek;approximately 2000' south of US 221 intersection with SR 1111; east of US 221 along creek to Railroad tracks; use Jayne's Rd (no SR) for access" (Renninger 2003). [Note: Transplant plots (EO 286) source feature currently overlaps area of native plants (EO 106). M. Buchanan (pers. comm. with S. Mason, 10 March 2009) advised to leave mapping this way because the native population may be patchy and the polygon provided by Padgett (2007) may not account for this and encompass the entire extent of the occurrence.]

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City			
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Element Occurrence Report

EO ID 20301 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48407

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Occurrence located during survey work for the Rutherfordton Bypass (T.I.P. R-2233A&B), areas outside of proposed corridor, alternative corridors, and areas of potential indirect effects were not surveyed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
39819	2005: NCNHP	Floyds Creek near I	Polygon	Delimited				GPS, 3-meter accu
90099	2011; NCDOT	Tate Conservation I	Polygon	Delimited				GPS, 10-meter acc
90100	2013; NCDOT	Tate Conservation I	Polygon	Delimited				GPS, 10-meter acc
90103	2015; NCDOT	Tate Conservation I	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 20301 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48407

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2005, 2011, 2013, 2015
Qualitative ground survey	2003, 2005

Surveyor

Surveyor
Heather Wallace Renninger, NCDOT, H.W. Lochner Inc
Emily Fentress, H.W. Lochner Inc.
James Padgett, NHP
Lance Fontaine, NCDOT
Jackie Wagner, ASU
TIm Bassette, NCDOT
Phil May, Carolina Ecosystems
Chris Hopper, Carolina Ecosystems
Rob Crowther, Carolina Ecosystems
Moni Bates, Alderman Environmental

Survey Date 2015-04-23

Last Observation Date 2015-04-23 **First Observation Date** 2003-05-15

EO Data 2015: 4547 plants counted on 23 April (NCDOT 2015).
2013: 1675 plants counted on 16 April (NCDOT 2013).
2012: Wagner et. al. observed over 3000 plants on 15 March 2012 (Wagner 2012).
2011: 3088 plants countedon 15 April (NCDOT 2011).
2010: 93 plants moved from the area to be impacted by the road project to the transplant area on this site on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286). NCDOT staff propose to transplant 330 individuals that occur within the construction footprint to the Tate Conservation Easment during the winter of 2009-2010 (NCDOT 2009) [Relocated plants are tracked under EO 286].
2008: NCDOT staff, including Fontaine, observed at total of 2,326 plants at this site in 2008: 2104 plants were observed on both sides of the unnamed tributary of Floyd's Creek between the Chinchfield railroad tracks and Jaynes Road (SR-2287) on 22 April 2008: 222 plants (some in flower) were observed on 28 February 2008 along the ephemeral stream perpendicular to US-221 that feeds into the unnamed tributary (Fontaine 2008). Additional plant found along a small cove area between the original known localities along the unnammed tributary [sub occurance B] and the small clump of plants found along the highway (US 221) [sub occurance A]. Estimated 50-75 additional plants. This occurance was re-mapped to reflect this additional find (Padgett 2008).
2005: 641 clumps observed and counted on 20 April 2005 by H W Lochner and Padgett (Padgett 2007). Estimated between 200-500 plants seen (Padgett 2005).
2003: Sub-occurrence [A], 8 clumps, 4 seedlings over 0.02 acres; vegetative reporduction evident (Renninger 2003). Sub-occurrence [B], Approximately 250 individual clumps, in leaf and flower, seedlings and clonal/vegetative reproduction evident; flowers mostly disintegrated (Renninger 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments Conservation Management Plan prepared by NCDOT includes monitoring and reporting 1-year, 3-year, and 5-year post-transplant (NCDOT 2009).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Few invasives present (Fontaine 2009). Seedlings and clonal/vegetative reproduction evident; flowers mostly disintegrated (Renninger 2003).

Condition Rating

Size of EO 3000+ plants (2012). 2326 plants (2008). 641 clumps observed and counted on 20 April 2005 by H W Lochner and Padgett (Padgett 2007). About 250 (Renninger 2003).

Landscape Context Medium to high quality forest (Renninger) over more than 3 acres (Wichmann 2005).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-04-22

Element Occurrence Report

EO ID 20301 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48407

EO Rank Comments Changed to A, according to rank specs (2008). Moved back up from C to B once quantitative data was added (Padgett 2007). Downgraded from a B to a to C using current EO data and following current EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Sub-occurrence [A], Dry-mesic Oak Hickory; high quality; Associated species: Quercus alba, Quercus rubra, Quercus coccinea, Quercus velutina, Carya tomentosa [C. alba], Pinus echinata, Oxydendron arboretum, Euonymus americana, Cornus florida, Liriodendron tulipifera, Lonicera sempervirens, Carex sp (Renninger 20005). Sub-occurrence [B], Mesic Mixed Forest grading into Basic Mesic Forest, medium to high quality, Pacolet soils; Associated species: red oak, white oak, strawberry bush, carpinus, sourwood; alluvial and lower to upper slope; Micro-relief: flat, concave, convex, and drop-off; moist to dry; filtered light (Renninger 2003).

Min. Elevation	760.00	**feet**	231.65	**meters**
Max. Elevation	870.00	**feet**	265.18	**meters**
Observed Area	3.00	**acres**	1.21	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land N - No **More Protection** N - No **TNC involvement**

Protection Comments Landowner along northeastern part of EO unwilling to enter into a conservation easement agreement with NCDOT (Bassette 2009). This population is expected to be protected with a conservation easement held by NC DOT as mitigation for impacts related to the widening of NC 221. The Tate family will retain ownership of the land (DOT 2009).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Robert and Carolyn Tate	4411 US 221 South, Forest City, NC 28043; (828) 245-2910
State/provincial gove	NC Department of Transportation	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments NCDOT proposes to use this site as a repository for approximately 333 Hexastylis naniflora plants that will be displaced by the US 221 road widening project. These plants may come from EOs 076, 107, 113, 114,122, 172, 173, 174, and 175 (DOT 2009). 0.293 acres and 50 plants anticipated to be directly affected and 0.475 acres and 255 plants indirectly affected by this project (Fontaine 2009 - see Biological Assessment).

Additonal Topics The two sub occurences have been remapped and combined after additional plants were found between them (Padgett 2008). Sub-occurrence [A], "Along proposed US 221 widening corridor (NCDOT TIP# R2233A)" (Renninger 2005). Impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005). Sub-occurrence [B], May be inpacted by US 221 widening (Renninger 2003). "impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20301 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48407

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
F08CON01NCUS	Contributed. 2008. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N
F15DOT01NCUS	N.C. Department of Transportation. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory, NCDOT.	N
U08DOT02NCUS	NCDOT. 2008. Biological Assessment forthe Proposed US 221 Widening and Bypass around Rutherfordton, Rutherford County, NC [select relevant pages for EO data].	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	BLW	**Transcription Date**	3/9/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 10:20:35AM

Element Occurrence Report

EO ID 20301 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48407

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62947
SITE	2438.000000 - S.USNCHP*4311
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	5.32819292615
Hectares	2.15624650499
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
MAPSHEET	40119 - 35081-C7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/29/2004 2:11:04PM
Last Modified By	JTF	**Last Modified Date**	7/27/2016 6:13:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20296 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48390

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 101 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
328	Camp Creek Bluff	N

Survey Site

Survey Site Name

South Fork Catawba River: Jacob Fork, Camp Creek North and Camp Creek Bluff (Parent includes sub EOs 005, 006, & 180).

Directions

South Fork Catawba River: Jacob Fork, Camp Creek North and Camp Creek Bluff. This is a parent EO of three sub EOs: 005, 006, & 180). See each sub EO for detailed directions (Wichmann 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20296 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48390

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO8 is 2.2 km to the south and in the Broad River basin; EO117 is 2.5 km to the south and in the Broad River Basin (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49130	Parent EO 101	South Fork Catawb	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Element Occurrence Report

EO ID 20296 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48390

Survey Date 2002-04-18
Last Observation Date 2002-04-18 **First Observation Date** 1981-05
EO Data This is a parent EO of three sub EOs: 005, 006, and 180 (Wichmann 2005). See each sub EO for detailed EO data.
Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO EO 180: ABOUT 100 PLANTS (GADDY 1981).
EO 006: New home site; extirpated (Gillian Newberry 1995).
EO 005: ABOUT 100 PLANTS IN 0.5 ACRE, CREEKHEAD HAS 200-300 IN 1 ACRE (GADDY 1981).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2002-04-18
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 20296 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48390

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F89NHP01NCUS	NCNHP Staff, 1989 Field Survey	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
G02BUR01NCUS	Oakley, S.C. 2002. An Inventory of the Significant Natural Areas of Burke County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 5/19/2016 12:00:00AM

Transcribed By Wichmann **Transcription Date** 7/13/2005 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By SCM **Digital Mapping Date** 7/23/2014 4:29:23PM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	31
SITE	31.000000 - S.USNCHP*143
HUC_12	030501020201
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	8.45234209618
Hectares	3.42054677007
WATERSHED	191 - 03050102
MAPSHEET	39389 - 35081-E5
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 20296 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48390

Record Create User	CDD	**Record Create Date**	7/29/2004 9:53:45AM
Last Modified By	JTF	**Last Modified Date**	5/19/2016 6:10:31PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20295 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48385

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 100 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: parent EO including: 14,49,50,51,73,74,149,233,235-241&246

Directions

Broad River/Sandy Run Natural Areas: This is a parent EO which included 15 sub EOs: 014, 049, 050, 051, 073, 074, 149, 233, 235, 236, 237, 238, 239, 240, 241, and 246 (Wichmann 2005). See each sub EO for detailed directions. This area is refered to as the Broad River Tract by NC DOT.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20295 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48385

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30363	Parent EO 100	Broad River/Sandy	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2012-05-17

Last Observation Date 2012-05-17 **First Observation Date** 2001-03-05

Element Occurrence Report

EO ID 20295 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48385

EO Data This is a parent EO which included 15 sub EOs: 014, 049, 050, 051, 073, 074, 149, 233, 236, 237, 238, 239, 240, 241, and 246 (Wichmann 2005). See each sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO EO 14: Large number of plants (2001). 177 plants (2000). 200 CLUMPS (GADDY 1981).
 EO 49: 538 plants (2008). 707 plants observed by NC DOT (2003).Subpop 3: Estiamted around 300 plants (2001). Subpop 1: fewer than 200 clumps (2001); subpop 2: estimated 200 plants (2001).
 EO 50: 1,397 plants (2008). 919 plants (2003). About 1000 clumps estimated over several acres (2001).
 EO 51: 515 plants (2008). 11 individuals (2003). 310 plants (2003). Over 1000 clumps estimated over 0.5 mile area (2001).
 EO 73: over 1000 (2012). 3,920 plants (2003). Over 2000 estimated plants (2001). Estimated 500-1000 plants (2001).
 EO 74: 490 plants (2008). 457 plants (2003). Estimate of 100-200 plants (2001).
 EO 149: 1000 plants (2012). 1430 plants observed over 3 sub-occurrences (2003). [sub-occurrence A:]Couple thousand individuals (2005)
 EO 233: 40 plants (2012). 1,698 plants (2003).
 EO 236: Estimated 150-300 plants (2001).
 EO 237: No data (2001?)
 EO 238: 787 plants (2008). 752 plants (2003).
 EO 239: 47 plants (2008). 39 plants over 0.18 acres (2003).
 EO 240: Failed to find (2008). 18 plants (2003). Less than 20 clumps (2001).
 EO 241: 12 plants (2008). 46 plants (2003).
 EO 246: Less than 100 plants esitmated (2001)

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-15
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description
Min. Elevation **feet** **meters**
Max. Elevation **feet** **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N
2429	NC Division of Mitigation Services Easement		N - No	N
889	Broad River Greenway		N - No	N

More Management
Management Comments

Element Occurrence Report

EO ID 20295 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48385

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments NCPCP issued permit ID #139 to Matthew Jones (Garner-Webb University) to allow for activities proposed in his pollination study proposal including covering flowers and collecting flowers and seeds from all sub-EOs under this parent. Permit expires 31 December 2009 (NCPCP 2009).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
G09PCP01NCUS	N.C. Plant Conservation Program. 2009. Protected Plant Conservation Permit and Record, issued in 2009.	N
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/22/2016 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/14/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	4/22/2016 11:04:11AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Element Occurrence Report

EO ID 20295 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48385

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050506
HUC_12	030501050505
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	113.525647544
Hectares	45.9422705101
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User CDD **Record Create Date** 7/29/2004 9:47:19AM

Last Modified By JLA **Last Modified Date** 4/22/2016 11:33:25AM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 20292 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48363

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 99 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N
2256	Kudzu Farm Rare Plant Site	N
2255	Jenkins Flatrock	N
2439	Floyds Creek Tributary Rare Plant Site	N
2446	Big Horse Creek Rare Plant Site	N
1879	Brice Rare Plant Site	N

Survey Site

Survey Site Name

Broad River: (Parent Includes 17 sub EOs: 09, 10, 37, 52, 53, 55, 61, 62, 63, 75, 76, 79, 90, 121,172, 181, & 182).
USFWS Flex Fund Monitoring Site 2 including sub records 10, 37, 55, 75, 76, 181

Directions

Broad River: Hensons Creek Ravine, Brice Rare Plant Site, and Sandy Mush Outcrop. This is a Parent EO that includes sub 17 EOs: 09, 10, 37, 52, 53, 55, 61, 62, 63, 75, 76, 79, 90, 121,172, 181, and 182 (Wichmann 2005). See sub EO records for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Element Occurrence Report

EO ID 20292 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48363

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68729	Parent EO 99	Broad River: Henso	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type **EO Survey Note**

Element Occurrence Report

EO ID 20292 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48363

Surveyor

Surveyor

James Padgett, NHP
Maxwell Feldman, NHP intern

Survey Date 2015-05-19

Last Observation Date 2015-05-19 **First Observation Date** 1981

EO Data 2016: Bloom counted 2552 plants on May 25 and June 15, 2016 in 2.29 acres of monitoring plots in sub EOs
2015: 3011 plants counted on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres (Padgett and Feldman 2015).
2014: Padgett counted 3094 plants within monitoring plots on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area (Padgett 2014).
2013: Padgett counted 3302 plants counted within monitoring plots May and on 17 July 2013 for estimated total of 35,000+ plants over 24.61 acres (Padgett 2013).
2012: 2551 plants counted in plots encompassing 2.29 total acres: sub-EOs 10, 37, 55, 75, 76, 79, 90, 121, and 181. Estimate of 27,415 plants over the 24.61-acre population area for those sub-EOs. (Padgett 2012).
This is parent EO that includes sub 17 EOs: 09, 10, 37, 52, 53, 55, 61, 62, 63, 75, 76, 79, 90, 121,172, 181, and 182 (Wichmann 2005). See sub EO records for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-19

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
933	Parris Heartleaf RHA		N - No	N

More Management

Management Comments

Element Occurrence Report

EO ID 20292 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48363

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.	N
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.	N
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F13NHP01NCUS	NCNHP Staff, 2013 Field Survey	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F03REN01NCUS	Renninger, H. 2003. Field survey.	N
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

Element Occurrence Report

EO ID 20292 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48363

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 3/18/2016 12:00:00AM
Transcribed By **Transcription Date**
Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**
Digital Mapping By JLA **Digital Mapping Date** 3/2/2016 2:05:27PM

Quality Control

Data QC Status **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050501
HUC_12	030501050503
LONGITUDE_DD	Not processed per agreement with Plaintiff/Request
LATITUDE_DD	Not processed per agreement with Plaintiff/Request
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Request
LATITUDE_DMS	Not processed per agreement with Plaintiff/Request
UTM_EASTING	Not processed per agreement with Plaintiff/Request
UTM_NORTHING	Not processed per agreement with Plaintiff/Request
UTM_ZONE	Not processed per agreement with Plaintiff/Request
Acreage	85.0784094986
Hectares	34.4300639399
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User CDD **Record Create Date** 7/28/2004 11:39:23AM
Last Modified By JTF **Last Modified Date** 7/27/2016 6:13:30PM
Do Not Exchange N
Last Received Date **Last Received Status**
Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 20291 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48337

Summary

Classification Code

Subnational Scientific Name	*Hexastylis naniflora*	**Nation**	US	**Global Rank**	G3
Subnational Common Name	Dwarf-flowered Heartleaf	**Subnation**	NC	**Subnational Rank**	S3

Identifiers

ELCODE_BCD	PDARI03060	**EO Number**	98	**Field Office Number**	
ID Confirmed	Y - Yes				

Element

Element Subnational ID	15335	**Protection Status**	T	**Data Sensitive Element**	

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	Parent EO Shape ID	Parent EO Number

Site/Directions

Sites

Site ID	Name	Auto-calculated
2545	Cat Square Heartleaf Forest	N

Survey Site

Survey Site Name

South Fork Catawba River: Indian Creek (parent EO which includes sub EOs 002, 003, 004, & 060)

Directions

South Fork Catawba River: Indian Creek. This is a parent EO of four Sub EOs: 002, 003, 004, & 060 (Wichmann 2005). See each sub EO for details.

Locators

Latitude	[redacted]	**Longitude**	[redacted]
South	**North**	**East**	**West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20291 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48337

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49120	Parent EO 98	South Fork Catawb	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2012-03-16

Last Observation Date 2012-03-16 **First Observation Date** 1957-04-28

EO Data This is a parent EO of four Sub EOs: 002, 003, 004, & 060 (Wichmann 2005). See each sub EO for detailed EO data.

Element Occurrence Report

EO ID 20291 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48337

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-06
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20291 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48337

References

Reference Code	Full Citation	EO Reference Primary
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/9/2015 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/30/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	5/3/2016 11:19:42AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Reque
LATITUDE_DD	Not processed per agreement with Plaintiff/Reque
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Reque
LATITUDE_DMS	Not processed per agreement with Plaintiff/Reque
UTM_EASTING	Not processed per agreement with Plaintiff/Reque
UTM_NORTHING	Not processed per agreement with Plaintiff/Reque
UTM_ZONE	Not processed per agreement with Plaintiff/Reque
Acreage	24.6056654811
Hectares	9.95757490991
WATERSHED	191 - 03050102
MAPSHEET	39390 - 35081-E4
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 20291 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48337

Record Create User	CDD	**Record Create Date**	7/28/2004 11:10:52AM
Last Modified By	JLA	**Last Modified Date**	5/3/2016 11:20:13AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20290 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48332

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 97 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
622	Sandy Run/Cliffside Natural Area	N
561	Sandy Run/Lovelace Natural Area	N

Survey Site

Survey Site Name

Broad River: Sandy Run Creek, Sandy Run/Cliffside, & Sandy Run/Lovelace NAs (parent EO of 17,18,69&230)

Directions

Broad River: Sandy Run Creek, Sandy Run/Cliffside Natural Area, & Sandy Run/Lovelace Natural Area. This is a parent EO that includes 4 sub EOs: 017, 018, 069, and 230 (Wichmann 2005). See each Sub EO for detailed directions.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20290 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48332

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

Remapped portion of sub EO 18 to reflect where it is actually located on the ground (Padgett 2014).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49110	Parent EO 97	Broad River: Sandy	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note

Surveyor

Surveyor

Survey Date 2002-04-25

Last Observation Date 2002-04-25 **First Observation Date** 1993-04-04

Element Occurrence Report

EO ID 20290 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48332

EO Data This is a parent EO that includes 4 sub EOs: 017, 018, 069, and 230 (Wichmann 2005). See each Sub EO for detailed EO data.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2002-04-25
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20290 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48332

References

Reference Code	Full Citation	EO Reference Primary
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F93NHP01NCUS	NCNHP Staff, 1993 Field Survey	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Padgett	**Version Date**	9/26/2014 12:00:00AM
Transcribed By	Wichmann	**Transcription Date**	11/29/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JEP	**Digital Mapping Date**	9/26/2014 3:11:52PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	25.63
Hectares	10.3714
WATERSHED	194 - 03050105
MAPSHEET	40120 - 35081-C6
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 20290 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48332

Record Create User	CDD	**Record Create Date**	7/28/2004 10:58:51AM
Last Modified By	JTF	**Last Modified Date**	10/8/2015 11:08:17PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20289 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48327

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 96 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
772	Murrays Mill/Upper Balls Creek Natural Area	N

Survey Site

Survey Site Name

Catawba River: Balls Creek, Murrays Mill Lake (Parent includes sub EOs 038, 039, & 184 [former sub EO 022]).

Directions

Catawba River: Balls Creek, Murrays Mill Lake. This is a parent EO that includes three sub EOs: 038, 039, and 184 [former sub EO 022] (Wichmann 2005). Located 100 meters from Murray's Mill Road at Murray's Mill (Terry Holdsclaw, 2010).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F1	Catawba			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20289 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48327

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49109	Parent EO 96	Catawba River: Bal	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Terry Holdsclaw

Survey Date 2013-10-30

Last Observation Date 2013-10-30 **First Observation Date** 1994-05-11

Element Occurrence Report

EO ID 20289 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48327

EO Data This is a parent EO that includes three sub EOs: 038, 039, and 184 [former sub EO 022] (Wichmann 2005). See each sub EO for detailed EO data.
Specimen collected near a creek by Terry Holdsclaw on 8 April 2010 (Terry Holdsclaw, 2010).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2010-09-30

EO Rank Comments EO rank based on EO rank specs for the species and most recent EO data for each EO (Robinson 2016). See each sub EO for details.

EO Rank Specifications Version Used

Description

EO Type

General Description Specimen collected in the woods just above the floodplain, 20 meters from the creek (Terry Holdsclaw, 2010).

Min. Elevation **feet** **meters**

Max. Elevation **feet** **meters**

Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land **More Protection** **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2038	Murrays Mill Conservation Site		N - No	N
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

Element Occurrence Report

EO ID 20289 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48327

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F96CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04DOT01NCUS	NC Department of Transportation and Catawba Coutny Historical Association. 2004. Draft Conservation Plant for Murrays Mill Conservation Area, Catawba County, NC. 2pp.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F01DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff in 2001.	N
F94CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N
F09DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2009.	N

Specimen

Specimen Description
HERB.NCU SN, Terry Holdsclaw 57, 8 April 2010.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/15/2016 12:00:00AM
Transcribed By	Wichman	**Transcription Date**	7/25/2005 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	7/26/2016 1:45:44PM

Element Occurrence Report

EO ID 20289 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48327

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501011104
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	32.50998887
Hectares	13.1563460351
WATERSHED	190 - 03050101
MAPSHEET	39026 - 35081-F1
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/28/2004 10:40:00AM
Last Modified By	JLA	**Last Modified Date**	7/26/2016 1:46:10PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20286 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48311

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 93 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
1385	West Shelby Mesic Slope	N

Survey Site

Survey Site Name

First Broad River: Brushy Creek and West Shelby Mesic Slope (parent EO of Sub EOs: 034 and 035)

Directions

First Broad River: Brushy Creek and West Shelby Mesic Slope. This is a parent EO of Sub EOs: 034 and 035 (Wichmann 2005). See each sub EO for detailed directions.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20286 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48311

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49897	Parent EO 93	West Shelby Mesic	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type **EO Survey Note**

Surveyor

Surveyor

Survey Date 2005-05-19

Last Observation Date 2005-05-19 **First Observation Date** 1997-06-04

EO Data This is a parent EO of two Sub EOs: 034 and 035 (Wichmann 2005). See each sub EO for details.

Element Occurrence Report

EO ID 20286 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48311

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-19
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20286 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48311

References

Reference Code	Full Citation	EO Reference Primary
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/17/2015 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/29/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	9/9/2015 2:28:33PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050703
HUC_12	030501050701
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DD	Not processed per agreement with Plaintiff/Requestor
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requestor
UTM_EASTING	Not processed per agreement with Plaintiff/Requestor
UTM_NORTHING	Not processed per agreement with Plaintiff/Requestor
UTM_ZONE	Not processed per agreement with Plaintiff/Requestor
Acreage	2.7942786481
Hectares	1.13080619498
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 20286 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48311

Record Create User	MAF	**Record Create Date**	7/27/2004 4:29:43PM
Last Modified By	JLA	**Last Modified Date**	9/17/2015 2:08:21PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20279 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48294

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 92 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Second Broad River: Webbs Creek, headwaters

Directions

Second Broad River: Webbs Creek, headwaters. Four miles east-northeast of Forest City and 0.7 miles east of Corinth Intersection. North of SR 1574 along small springhead and Webbs Creek.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20279 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48294

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24915	2003; Padgett	Second Broad Rive	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2003-04-20

Last Observation Date 2003-04-20 **First Observation Date** 2003-04-20

EO Data Padgett estimate 200-400 plants along north and south facing slopes during field surveys on 20 April 2003 (Padgett 2003).

Element Occurrence Report

EO ID 20279 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48294

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Estimate 200-400 plants along north and south facing slopes (Padgett 2003).
Landscape Context

EO Rank BC - Good or fair estimated viability **EO Origin Subrank**

EO Rank Date 2003-04-20
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Associated species include Acer rubrum, Liriodendron tulipifera, Quercus alba, Ilex spp., Polystichum acrostichoides, Osmunda regalis, Osmunda cinnamomea, Smilax glauca, Sanguinaria canadensis, Kalmia spp., and Carex spp. in a Dry-Mesic Oak-Hickory Forest community. Small seepage areas are present along the unnamed tributary (Padgett 2005).

Min. Elevation	1,000.00	**feet**	304.80	**meters**
Max. Elevation	1,020.00	**feet**	310.90	**meters**
Observed Area	0.80	**acres**	0.32	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20279 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48294

References

Reference Code	Full Citation	EO Reference Primary
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey	Y
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description
HERB.BOON 165999, J E PADGETT APRIL 18, 2003
HERB.BOON 166600, J E PADGETT APRIL 18, 2003
HERB.BOON 166001, J E PADGETT APRIL 18, 2003

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/26/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/26/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 10:30:09AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050406
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.893076994469
Hectares	0.36141599501
WATERSHED	194 - 03050105
MAPSHEET	40119 - 35081-C7
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 20279 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48294

Record Create User	CDD	**Record Create Date**	7/26/2004 2:53:40PM
Last Modified By	LGR	**Last Modified Date**	10/8/2015 10:33:56AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48242

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 91 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22403 **Parent EO Shape ID** 63,307.00 **Parent EO Number** 245

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek and SR 1116 (sub EO of EO 245)

Directions

Broad River: Floyds Creek and SR 1116. This is a sub EO of Parent EO 099 (Wichmann 2005). 2 miles NE of Brice, NC.; 0.6 miles West of US 221 on the South side of SR 1116. The site is located 0.9 miles South of the interchange between US 221 and SR 1116. The individuals occur along a small springhead 0.1 miles South of SR 1116, 0.1 miles past Floyds Creek (Padgett 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48242

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometers wide (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24887	2003; Padgett	Broad River: Floyds	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2003

Surveyor

Surveyor
James Padgett, ASU
James Padgett, NHP

Element Occurrence Report

EO ID 20256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48242

Survey Date 2012-07
Last Observation Date 2012-07 **First Observation Date** 2003-03-13
EO Data 2012: Site revisited in July 2012 with approximately 30 individuals observed (Padgett 2013).
2003: 30 individual singles and clumps counted (Padgett 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 30 individuals (Padgett 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-03-13
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Small forested north-facing dry to mesic slope with Kalmia latifolia, Quercus spp., Acer rubrum, Tipularia discolor and Smilax glauca present (Padgett 2003).

Min. Elevation	760.00	**feet**	231.65	**meters**
Max. Elevation	780.00	**feet**	237.74	**meters**
Observed Area	0.10	**acres**	0.04	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 20256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48242

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/22/2015 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/26/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/26/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/25/2015 10:12:10AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.137013248363
Hectares	0.0554473800055
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 20256 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48242

Record Create User	CDD	**Record Create Date**	7/20/2004 11:18:13AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20255 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48235

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 90 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Richardson Creek, tributary near SR 1122 (this is a sub EO of 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Richardson Creek, unnamed tributary near SR 1122: This is a sub EO of parent EO 099 (Wichmann 2005). Approximately 1 mile southwest of Harris on SR 1111. 0.9 miles South of SR 1122. 0.5 miles West of State Route 1122 to unnamed branch of Richardsons Creek. The element occurrence is located 0.2 miles South of SR 1122 downstream of unnamed branch along the North facing slope.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20255 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48235

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28929	2003; Padgett	Broad River: Richa	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Surveyor
Padgett, nhp

Survey Date 2003-03-02

Last Observation Date 2003-03-02 **First Observation Date** 2003-03-02

Element Occurrence Report

EO ID 20255 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48235

EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2003: Estimated between 100-200 individual plants along small stream and lower slopes (Padgett 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 100 -200 individual plants (Padgett 2003).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-03-02

EO Rank Comments EO rank based on EO rank specs for this species and most current EO data (Wichmann 20005).

EO Rank Specifications Version Used

Description

EO Type

General Description This population occurs with the following associated species: Quercus alba, Acer rubrum, Kalmia latifolia, Polystichum acrostichoides and Tipularia discolor (Padgett 2003).

Min. Elevation 780.00 **feet** 237.74 **meters**

Max. Elevation 830.00 **feet** 252.98 **meters**

Observed Area 0.95 **acres** 0.38 **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	
Private individual	Slawson	2012 no response
Private individual	V.M. Henson (2012), Silver Spring LLC (2014)	2012 no response

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Element Occurrence Report

EO ID 20255 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48235

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/18/2016 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/20/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/20/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:33:08PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.82902325921
Hectares	0.740180594975
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588

Record Maintenance

Element Occurrence Report

EO ID 20255 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48235

Record Create User	CDD	**Record Create Date**	7/20/2004 9:58:51AM
Last Modified By	JTF	**Last Modified Date**	3/18/2016 6:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20254 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48230

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 89 **Field Office Number**

ID Confirmed ? - Questionable

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Jacob Fork, Whitener Creek south of Valdese

Directions

South Fork Catawba River: Jacob Fork, Whitener Creek, 7.4 miles south of Valdese. Travel South on State Route 10 for 9.3 miles to Sugarloaf Road. Travel East on Sugarloaf Road for 1.7 miles and turn south on Corn Hill Road (State Route 1303). Travel 0.4 miles to second crossing of Whitener Creek. The site is located on the East side of State Route 1303 along 300 yards of the Northern bluff of Whitener Creek (Padgett 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20254 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48230

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

ID not confirmed (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24883	2003; NCNHP	South Fork Catawb	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2003-03-21

Last Observation Date 2003-03-21 **First Observation Date** 2003-03-21

EO Data Estimated 200 plants seen in bud (Padgett 2003).

Element Occurrence Report

EO ID 20254 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48230

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 2003-03-21
EO Rank Comments ID not confirmed (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description The population is associated with the following species: Kalmia latifolia, Ilex opaca, Polystichum acrostichoides, Pinus strobus, Pinus virginiana, Prunus serotina, Epigaea repens and Galax spp. (Padgett 2003).

Min. Elevation	1,240.00	**feet**	377.95	**meters**
Max. Elevation	1,260.00	**feet**	384.05	**meters**
Observed Area	0.30	**acres**	0.12	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** ? - Questionable **TNC involvement**
Protection Comments ID not confirmed (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey	Y

Element Occurrence Report

EO ID 20254 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48230

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Wichmann	**Version Date**	11/30/2004 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/20/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/20/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 10:27:16AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020201
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.332002815376
Hectares	0.134356979978
WATERSHED	191 - 03050102
MAPSHEET	39022 - 35081-F5
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/20/2004 8:06:05AM
Last Modified By	JLA	**Last Modified Date**	10/6/2015 10:27:44AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20251 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48223

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 87 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Lower Creek: Miller Creek, headwaters near Martin Marietta Materials

Directions

Catawba River: Lower Creek: Headwaters of Miller Creek, near Martin Marietta Materials; 2 miles south of Lenior. Travel South on US 321A to Connelly Springs Road, then 2.0 miles South. Martin Marietta Materials service entrance is located on the west side of Connelly Springs Road at junction of Colliers Church. The occurrence is located 0.2 miles North of end of Martin Marietta Materials service road along unnamed tributary of Miller's Creek.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Caldwell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20251 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48223

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24879	2004; Matthews	Catawba River: Lov	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2004

Surveyor

Surveyor

Jim Matthews, UNC-C Department of Biology, HARP
David Campbell, HARP

Survey Date 2011-11-04

Last Observation Date 2011-11-04 **First Observation Date** 2004-03-25

Element Occurrence Report

EO ID 20251 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48223

EO Data 55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park); relocation occurred to permit expansion at the quarry [see 'Additonal Topics']; a few plants were left at the site but, if the quarry is expanded, they will be extirpated (HARP 2011, Matthews 2012). 95 individual plants total: 42 vegetative and 53 in flower or bud (Matthews 2004).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 55 individuals dug for relocation (2011); 95 individual plants total: 42 vegetative and 53 in flower or bud (Matthews 2004).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2011-11-04

EO Rank Comments EO rank based on EO rank specs for the species and most recent EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description This population occurs with associated species of Quercus prinus, Kalmia latifolia, Quercus rubra and Fagus grandifolia (Matthews 2004).

Min. Elevation	1,180.00	**feet**	359.66	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	0.05	**acres**	0.02	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No

Protection Comments Site is being considered for future expansion of quarry (Matthews 2004).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Martin Marietta Materials	Brian North, PE (704) 409-1475

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Relocation of plants from this occurrence occurred to permit expansion at the quary. At the request of Martin Marietta, negotiations were held with USFWS regarding the potential for transplanting the population. This action was approved verbally by USFWS on 23 May 2011 (HARP 2011).

Additonal Topics

Element Occurrence Report

EO ID 20251 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48223

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
A04MAT01NCUS	Matthews, J. 2004. North Carolina Natural Heritage Program Endangered and Rare Plant Field Survey Form March 25 2004.	Y
F11CON01NCUS	2011. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N
F12CON01NCUS	2012. Personal communications, field survey forms, and other contributions from sources outside the Natural Heritage Program.	N

Specimen

Specimen Description

Hexastylis naniflora (2004-03-25 UNCC Herbarium)

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Mason **Version Date** 4/2/2012 12:00:00AM

Transcribed By CDD **Transcription Date** 7/19/2004 12:00:00AM

Manual File Note

Mapping

Paper Mapping By CDD **Paper Mapping Date** 7/19/2004 12:00:00AM

Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 10:23:39AM

Quality Control

Data QC Status **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010702
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.0415761575624
Hectares	0.016825299999
WATERSHED	190 - 03050101
MAPSHEET	38656 - 35081-G5
COUNTY	1830 - NCCALD

Record Maintenance

Element Occurrence Report

EO ID 20251 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48223

Record Create User	CDD	**Record Create Date**	7/19/2004 12:59:28PM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 1:03:59PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20249 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48219

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 85 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	Parent EO Shape ID	Parent EO Number

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Buffalo Creek: northeast of SR 1903
NCDOT TIP: R-2824

Directions

Buffalo Creek, northeast of SR 1903: Northeast of Shelby, on SR 1906 (Costner Road) over Buffalo Creek. Population is NW of Road (Underwood 2004). 1.3 miles southeast of Beam Mill. From Shelby, NC drive on State Route 18 North to State Route 1906 East for 1.3 miles over Buffalo Creek. The element occurrence is located on the North side of State Route 1906 along the bluff of Buffalo Creek (Dollison 2004).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D4	Cherryville			
35081-C4	Waco			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 20249 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48219

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Parent EO 232 occurs 2.1 km to the south within the Buffalo Creek Rare Plant Site.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24877	2004; Underwood	Buffalo Creek, nortl	Polygon	Delimited				1:24,000 topos (pa
28168	2005; HDR	Buffalo Creek, nortl	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	

Element Occurrence Report

EO ID 20249 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48219

Surveyor

Surveyor

David Bailey
HDR personnel
HARP personnel
Chris Underwood, NC DOT

Survey Date 2005-Spring

Last Observation Date 2005-Spring **First Observation Date** 2004-04-29

EO Data in the spring of 2005, HDR estimated 267 plants based on counts from 8 sample plots, 1/100 acre in size, established over approximately 0.45 acres (HDR 2005). Underwood counted eight individuals on 29 April 2004, defined as several stems with leaves and flowers (Underwood 2004).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 267 plants estimated based on counts from 8 sample plots, 1/100 acre in size, established over approximately 0.45 acres (HDR 2005).

Landscape Context road side (HDR 2005).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-Spr

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description ".. northwest facing slope...consists primarily of Mesic Mixed Hardwood Forest...The population at this site is found on a moist, very steep slope dominated by mixed hardwoods...Dominant vegetation includes American beech, sourwood, white oak, American hornbeam (Carpinus caroliniana), chestnut oak, and sweetgum (Liquidambar styraciflua). The herb, shrub, and vine layers include hepatica (Hepatica spp.), Christmas fern (Polystichum acrostichoides), privet (Ligustrum spp.), bloodroot (Sanguinaria canadensis), and sweetshrub (Calycanthus floridus) (HDR 2005). "Upland Hardwoods, on Face/crest of slope, fairly dry"(Underwood 2004).

Min. Elevation	795.00	**feet**	242.32	**meters**
Max. Elevation	870.00	**feet**	265.18	**meters**
Observed Area	0.45	**acres**	0.18	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Element Occurrence Report

EO ID 20249 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48219

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-3828, see U05HDR01NCUS (Wichmann 2005). Zero impact planned (HDR personnel 2005).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Wichmann	**Version Date**	6/14/2005 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/19/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/19/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 10:09:55AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 20249 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48219

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050802
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.538388531456
Hectares	0.217878444975
WATERSHED	194 - 03050105
MAPSHEET	39754 - 35081-D4
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/19/2004 8:46:36AM
Last Modified By	JTF	**Last Modified Date**	1/6/2016 2:37:17PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20247 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48203

Summary

Classification Code

Subnational Scientific Name	*Hexastylis naniflora*	**Nation**	US	**Global Rank**	G3
Subnational Common Name	Dwarf-flowered Heartleaf	**Subnation**	NC	**Subnational Rank**	S3

Identifiers

ELCODE_BCD	PDARI03060	**EO Number**	84	**Field Office Number**	
ID Confirmed	N - No				

Element

Element Subnational ID	15335	**Protection Status**	T	**Data Sensitive Element**	

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	20351	**Parent EO Shape ID**	48,838.00	**Parent EO Number**	117

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: Knob Creek, Leeman Gap (north) (Sub EO of EO 117)

Directions

First Broad River: Knob Creek, Leeman Gap (north). This is a Sub EO of Parent EO 117 (Wichman 2005)."Along Leman Gap Road coming out from Leman Gap in Burke County just inside Cleveland County on left hand side of road in steep ravine along small stream" (Padgett 2003).

Locators

Latitude	Not processed per ag Not processed per ag	**Longitude**	Not processed per agreem Not processed per agreem
South	**North**	**East**	**West**

County

County Name	State	Nation
Burke (NC)	NC	US
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20247 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48203

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Near EO 083; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

This EO needs to be re-examined and verified (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30437	2003; NCNHP	First Broad River: N	Line	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Surveyor
James Padgett, NHP

Survey Date 2003-03-21

Last Observation Date 2003-03-21 **First Observation Date** 2003-03-21

EO Data 2003: Estimated between 100 to 200 plants seen in bud (Padgett 2003).

Element Occurrence Report

EO ID 20247 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48203

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 2003-03-21
EO Rank Comments EO ID not confirmed (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Associated species found at this survey site include: Pinus strobus, Smilax spp., Vaccinium spp., Prunus serotina and Polystichum acrostichoides (Padgett 2003).

Min. Elevation	1,180.00	**feet**	359.66	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	0.50	**acres**	0.20	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** ? - Questionable **TNC involvement**
Protection Comments EO ID not confirmed (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey	Y

Element Occurrence Report

EO ID 20247 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48203

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/15/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/15/2004 12:00:00AM
Digital Mapping By	BLW	**Digital Mapping Date**	12/2/2005 3:08:43PM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
COUNTY	1828 - NCBURK
WATERSHED	194 - 03050105
MAPSHEET	39389 - 35081-E5
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	4.7621
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
WATERSHED	191 - 03050102
ACREAGE	11.77
HUC_12	030501050605

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/13/2004 3:45:08PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 12:56:49PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20246 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48201

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 83 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20351 **Parent EO Shape ID** 48,838.00 **Parent EO Number** 117

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: Knob Creek: Leeman Gap (south) (Sub EO of EO 117)

Directions

First Broad River: Knob Creek, Leeman Gap (south). This is a Sub EO of ParentEO 117 (Wichmann 2005). "Off Leman Gap Road to Dirty Ankle Road approximately 1.0 mile to where creek runs along side of road across creek on noth facing slope (Padgett 2003).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20246 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48201

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Near EO 083; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

This EO needs to be re-examined and verified (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24873	2003; NCNHP	First Broad River: K	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003

Surveyor

Surveyor
James Padgett, NHP

Survey Date 2003-03-21

Last Observation Date 2003-03-21 **First Observation Date** 2003-03-21

EO Data 2003: Estimated 100 plants seen in bud (Padgett 2003).

Element Occurrence Report

EO ID 20246 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48201

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 2003-03-21
EO Rank Comments EO ID not confirmed (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description The element occurrence is along the mid-lower slope of the topographic position. The site also occurs in a moist to dry moisture regime in a moderately filtered to shady light condition. Associated species found at this survey site include: Kalmia latifolia, Quercus montana, Quercus alba, Tipularia discolor and Polystichum acrostichoides (Padgett 2003).

Min. Elevation	1,200.00	**feet**	365.76	**meters**
Max. Elevation	1,220.00	**feet**	371.86	**meters**
Observed Area	0.60	**acres**	0.24	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** ? - Questionable **TNC involvement**
Protection Comments EO ID not confirmed (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown		

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20246 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48201

References

Reference Code	Full Citation	EO Reference Primary
F03NHP01NCUS	NCNHP Staff, 2003 Field Survey	Y

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/13/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/13/2004 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/25/2015 9:07:08AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050605
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.606080487605
Hectares	0.245272450013
WATERSHED	194 - 03050105
MAPSHEET	39389 - 35081-E5
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/13/2004 1:01:51PM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 12:56:00PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20243 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48195

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 80 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 and S of SR 2125 (sub of 247)

Directions

Broad River: Floyds Creek near Harris, unnamed triburary west of US 221 and south of SR 2125. This is a sub EO of Parent EO 247 (Wichmann 2005). 0.5 miles east of Harris. The site is located 0.1 miles south of SR 2125 and 0.1 miles East of the bridge over Floyds Creek. The population is along a ridge on the South side of an unnamed tributary to Floyds Creek.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20243 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48195

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
24870	2013; NCNHP	Broad River: Floyds	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	

Surveyor

Surveyor
James Padgett, ASU
James Padgett, NHP

Element Occurrence Report

EO ID 20243 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48195

Survey Date 2012-07
Last Observation Date 2012-07 **First Observation Date** 2003-03-13
EO Data 2013: Site visited in In July 2012 and remapped, no plant counts made in 2012 (Padgett 2012).
2003: Estimate 50 individual plants seen (Padgett 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 50 individual plants (Padgett 2003).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-03-13
EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description This site has been described as a Mixed Hardwood community along the mid-slope of the topographic position. The population also exists along a moist to dry moisture regime in a moderately filtered light intensity. Associated species found at survey site include: Quercus spp., Acer rubrum, Polystichum acrostichoides, Lonicera japonica, Smilax glauca and Pinus virginiana (Padgett 2003).

Min. Elevation	780.00	**feet**	237.74	**meters**
Max. Elevation	800.00	**feet**	243.84	**meters**
Observed Area	0.50	**acres**	0.20	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	Private	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 20243 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48195

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	8/24/2016 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/13/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/13/2004 12:00:00AM
Digital Mapping By	JEP	**Digital Mapping Date**	10/7/2015 11:46:35AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.04653022494
Hectares	0.423516410003
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 20243 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48195

Record Create User	CDD	**Record Create Date**	7/13/2004 10:56:04AM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:47PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20242 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48193

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 79 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Richardson Creek, Riverside Church (This is a sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Richardson Creek, Riverside Church. This is a sub EO of parent EO 099 (Wichmann 2005). Off of SR 1115 south of Harris approximately 0.3 mile behind Riverside Church on north facing slope of unnamed tributary of Richardson Creek (Padgett 2001).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East			
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20242 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48193

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located near sub EO 055; All sub EOs are located within 1.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68700	2012; Padgett	east of McKinney B	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type **EO Survey Note**

Quantitative ground survey

Surveyor

Surveyor

James Padgett, ASU

James Padgett, NHP

Element Occurrence Report

EO ID 20242 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48193

Survey Date 2012-05
Last Observation Date 2012-05 **First Observation Date** 2001-04-01
EO Data 2012: Site visited and remapped in May of 2012 (Padgett 2013).
2001: 200-300 clumps in leaf and flower along 100 yards of stream; high numbers of seedlings and flowering individuals (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO high numbers of seedlings and flowering individuals (Padgett 2001).
Condition Rating
Size of EO 200-300 clumps in leaf and flower along 100 yards of stream (Padgett 2001).
Landscape Context

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-01
EO Rank Comments EO rank based on EO rank specs for this species and most recent EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Mesic hardwood cove and cut over; slope is very rocky in places; associated species include: Sanguinaria canadensis, Quercus alba, Polystichum acrostichoides, and Hepatica americana. This area was but over within the past five years with parts of the EO effected. Numerous seedlings are present. The cutover sees to be a benefit to this population (Padgett 2001).

Min. Elevation	720.00	**feet**	219.46	**meters**
Max. Elevation	730.00	**feet**	222.50	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	William Lowe, lowerun@att net	2012 permission granted
Private individual	Jerry Laughter, 828 453 7702	2012 no response

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 20242 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48193

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description

HERB.GWC 06044, J E PADGETT APRIL 04, 2001

HERB.BOON 15994, J E PADGETT APRIL 04, 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/18/2016 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/13/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/13/2004 12:00:00AM
Digital Mapping By	KAI	**Digital Mapping Date**	6/24/2013 8:16:24AM

Quality Control

Data QC Status		**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
HUC_12	030501050501
HECTARES	1.486694
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
ACREAGE	3.673686
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40483 - 35081-B7
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
COUNTY	1897 - NCRUTH

Element Occurrence Report

EO ID 20242 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48193

Record Maintenance

Record Create User	CDD	**Record Create Date**	7/13/2004 8:28:00AM
Last Modified By	JTF	**Last Modified Date**	3/22/2016 6:12:34PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20238 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48159

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 77 **Field Office Number**

ID Confirmed ? - Questionable

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2769	Little Gunpowder Creek Rare Plant Site 2	N

Survey Site

Survey Site Name

Catawba River: Gunpowder Creek, tributary approximately 3 miles N of Granite Falls.
NCDOT TIP: B-3126 at Gunpowder creek
Possible hybrid

Directions

Catawba River: Gunpowder Creek, unnamed tributary approximately 3 miles north of Granite Falls. 1.9 miles east of US321 on SR-1718 (Deal Mill Road) at three locations: A) on the west side of the road along unnamed tributary; B) on the north side of the Gunpower Creek bridge and west of SR-1718; C) on the north side of the Gunpower Creek bridge and east of SR-1718. Plants historically located along road south of the bridge but these were extirpated during the bridge replacement; see Beuregard (2000) for historical extent at this location.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Caldwell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G4	Granite Falls			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 20238 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48159

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Population is questionable as it's flower size and plant morphology favor H. heterophylla rather than H. naniflora; site should be revisited to confirm as NC-DOT is planning bridge replacment here soon (Padgett 2005). Inventory should be contucted after bridge replacement to assess impacts (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
79964	Subpop B: 2013 exUnnamed trib of Gu		Polygon	Delimited				GPS, 3-meter accu
79965	Subpop C: 2013 exUnnamed trib of Gu		Polygon	Delimited				GPS, 3-meter accu
79963	Subpop A: 2013 exUnnamed trib of Gu		Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2000, 2003, 2005
Quantitative ground survey	2005

Element Occurrence Report

EO ID 20238 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48159

Surveyor

Surveyor

Rachelle Beauregard, NCDOT
James Padgett, NHP
Tim Bassette, NC Department of Transportation
Pete Stafford, RKK (environmental consulting firm)

Survey Date 2013-05-15

Last Observation Date 2013-05-15 **First Observation Date** 2000-04-12

EO Data 2013: 617 plants counted on 15 May (NCDOT 2013).
2013-2012: Plants present in 2013 and 2012 at locations A, B, and C as indicated on map provided by NCDOT but made by Stafford; no quantitative data on the number of plants was included (NCDOT 2014).
2011: 731 plants counted on 3 November 2011 by NCDOT
2007: 128 clusters observed by NCDOT in 2007 (NCDOT 2009).
2006: 334 plants are within construction project area (TIP: B-3126); 184 plants are expected to be impacted by construction activites in 2006; 160 plants are to be protected on-site in an area where the acreage needs to be verified (Wells 2006).
2005: 353 individual plants counted by NCDOT staff in April 2005 (HDR and HARP personnel 2005). Site visited with NC-DOT and saw roughly 50-75 plants. The timing was a bit early and the population is questionable as it's flower size and plant morphology favor H. heterophylla rather than H. naniflora. Site should be revisited to confirm as NC-DOT is planning bridge replacment here soon (Padgett 2005).
2003: NCDOT construction impacts expected according to Bassette in 2003 (Bassette 2003).
2000: 50 individual plants, stems and leaves over approximately 0.4 acres observed by Beauregard on 12 April 2000 (Beauregard 2000).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments NCDOT has committed to permanent protection and monitoring of at least 160 plants anticipated to remain (after construction) within the currently owned or expanded (through additional purchase) ROW (2006 Ammendment to the 2003 Biological Assessment, on file with USFWS Asheville Office) [C. Wells, 8/2006]. Site was subject to consultation with USFWS (worst-case scenario assumed, in that all Hexastylis plants were H. naniflora). If impacts exceed those anticipated in the 2006 Ammended Biological Opinion issued by FWS, consultation should be re-initiated (ASNC log no. 4-2-03-415, on file with USFWS Asheville Office) [C. Wells, 8/2006].

Research Needs Comments Future surveys should be conducted to assess extent of impacts due to NCDOT's bridge construction. [NCDOT committed to monitoring of this population in their 2006 Ammended Biological Assessment; C. Wells, 8/2006]

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 128 clusters (2007).

Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2007

EO Rank Comments EOR may need to be downranked after DOT impacts.

EO Rank Specifications Version Used

Description

EO Type

Element Occurrence Report

EO ID 20238 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48159

General Description Mesic Oak-Hickory Forest; medium quality. Forest cover types are fairly similar amongst the three subpopulations. The canopy is dominated by Quercus alba, Q. rubra, Carya glabra, Acer rubrum, Prunus serotina, Liriodendron tulipifera, and Pinus strobus. The understory consists of Carpinus caroliniana, Oxydendrum arboretum, Acer rubrum, Cornus florida, Ilex opaca. The shrub layer includes Kalmia latifolia, Leucothoe axillaris var. editorium, and Euonymus americanus. Woody vines included Bignonia capreolata, Vitis rotundifolia, and Toxicodendron radicans. The herb layer is sparse to moderately dense and includes Hexastylis naniflora, Goodyera pubescens, Aplectrum hyemale, Mitchella repens, Chimaphila maculata, Polystichum acrostichoides, Tiarella sp., and Desmodium nudiflorum (NCDOT 2011). A pasture runs along the north and south banks of creek and a side tributary along road; pasture south of creek recently logged, thick brush, grades into a more mature forest, plants occur under thick brush; pasture north of Creek thick with Ilex opaca and lacking other understory shrubs due to grazing, plants occur in areas safe from cattle, tree bases and along tributary. This population occurs with the following associated species: Betula nigra, Quercus alba, Prunus serotina, Carya glabra, Acer rubrum, Carpinus caroliniana, Leucothoe axillaris var. editorium, Vitis rotundifolia and Mitchella repens (Padgett 2005). Piedmont/Low Mountain Alluvial Forests with Betula nigra, Quercus alba, Prunus serotina, Carya glabra, Acer rubrum, Carpinus caroliniana, Leucothoe axillaris var editorium, Vitis rotundifola, Mitchella repens, Tiarella sp. (Beauregard 2000).

Min. Elevation	1,170.00	**feet**	356.62	**meters**
Max. Elevation	1,180.00	**feet**	359.66	**meters**
Observed Area	0.40	**acres**	0.16	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No

Protection Comments The population on the Southern bank of Gunpowder Creek is expected to be adversely impacted by proposed NCDOT bridge construction. NCDOT has purchased additional property as a right of way easement to protect the remaining population of this element occurrence (Padgett 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Invasive species noted & degree of threat from invasive species: Lonicera japonica is prevalent in subpop A. Some Ligustrum sinense is present in subpopulation A. (NCDOT 2011).

Additonal Topics "B-3126 (EO 77) in Caldwell County was recently inventoried by NCDOT staff due to changes in project alignment. A total of 353 individual plants were counted in April 2005 and proposed project impacts have not yet been determined" (HDR personnel 2005). "B-3126...construction impacts to DFHL are expected if the bridge is replaced on a new alignment to the west of the existing bridge. Consequently, a Biological Conclusion of May Effect is likely to Adversely Affect was rendered for this project. The October 2001 review of the proposed project revealed no changes in land use. Furthermore, indirect or cumulative impacts to DFHL as a result of other development were not observed (Bassette 2003).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20238 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48159

References

Reference Code	Full Citation	EO Reference Primary
F00CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	7/13/2016 12:00:00AM
Transcribed By	CDD	**Transcription Date**	7/8/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	CDD	**Paper Mapping Date**	7/8/2004 12:00:00AM
Digital Mapping By	SCM	**Digital Mapping Date**	2/12/2015 11:34:43AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 20238 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 48159

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010803
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.49338748141
Hectares	0.604353404995
WATERSHED	190 - 03050101
MAPSHEET	38657 - 35081-G4
COUNTY	1830 - NCCALD

Record Maintenance

Record Create User	CDD	**Record Create Date**	6/30/2004 11:59:49AM
Last Modified By	JTF	**Last Modified Date**	7/15/2016 6:13:42PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 20023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22938

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 31 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Clark Creek, tributary near Fairbrook
NCDOT TIP: R-2824
NCDOT TIP: U-2307C I-40/Startown Road Interchange

Directions

South Fork Catawba River: Clark Creek, tributary near Fairbrook. Between Interstate 40 and US 70 near Fairbrook.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory	6		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 20023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22938

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

More than 2.0 Kilometers southwest of EO 277 and separated by a major highway and no suitable habitat (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

"...it is recommended that a follow-up survey is conducted...to determine actual impacts after construction is completed" (HDR personnel, 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
20022	1996; Savidge	Original 15th ave si	Point	Estimated	100.00	Meters		Other aerial photos
90008	2010 December 20	SW 15th Ave Site, S	Point	Estimated	25.00	Meters		Other aerial photos
90009	2010 December 20	15th Ave Site, Soutl	Point	Estimated	50.00	Meters		Other aerial photos
90010	2010 December 20	NW 15th Ave Site,	Point	Estimated	25.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996, 2001, 2005, 2010

Element Occurrence Report

EO ID 20023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22938

Surveyor

Surveyor

Tim Bassette, NC Dept. of Transportation
NC Dept. of Transportation Personnel
Savidge, NC DOT
James Padgett, ASU
HDR personnel
HARP personnel
Matt Haney, NCDOT

Survey Date 2010-12-21

Last Observation Date 2010-12-21 **First Observation Date** 1995-05-04

EO Data 2010: 1202 total plants counted on 20 and 21 December 2010: 423 plants counted at the 15th avenue site, 522 plants at the 1.54 acres SW1 site, and 25 plants at the 0.05 acre NW site on 20 December. 232 plants counted on 21 December at the 0.37 acre SW2 site (M. Haney 2015).
2001: A total of 10,700 plants were located in the construction project area (DOT TIP: U-2307C) in 2001; 5,400 were expected to be impacted by improvement activities. Verification of the current situation is needed, including the number of plants protected on-site (Wells 2006).
2005: NCDOT construction nearby, impacts needs to be determined (HDR personnel 2005).
2003: Small fragments of the original population on a steep hill near [NCDOT] project and along project's right-of-way limits, these fragments are unlikely to be impacted from future development due to their loction (Bassette 2003).
2001: A large number of plants seen when visited in 2001 (Padgett 2001).
1996: Over 1000 plants (Savidge 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO small fragments currently exist (Bassette 2003). A large number of plants seen when visited in 2001 (Padgett 2001). OVER 1000 PLANTS (SAVIDGE 1996).

Landscape Context

EO Rank C? - Possibly fair estimated viability **EO Origin Subrank**

EO Rank Date 2001-10

EO Rank Comments EO rank is based on EO Rank Specs for this species and available EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description SW1, SW2, and NW sites consists of medium quality Mesic Mixed Hardwood Forest (Piedmont subtype). Associated species include Platanus occidentalis, Quercus rubra, Quercus falcata, Quercus coccinea, Liriodendron tulipifera, Liquidambar styraciflua, Acer rubrum, Botrychium virginianum, Tipularia discolor, Asplenium platyneuron, Polystichum acrostichoides, Oxydendrum arboretum, Carya tomentosa, Prunus serotina, Pinus strobus, Pinus virginiana, Smilax sp., Cornus florida, Toxicodendron radicans, Nyssa sylvatica, Fagus grandifolia, Rubus sp., Quercus alba, Euonymus americanus, Quercus stellata, Vitis rotundifolia, Arundinaria gigantean, Juniperus virginiana, Lycopodium digitatum, Chimaphila maculata and Ilex opaca (Haney 2015).
 15th Ave site consists of medium quality Mesic Mixed Hardwood Forest (Piedmont subtype) which includes Kalmia latifolia, Fagus grandifolia, Cornus florida, Quercus rubra, Juniperus virginiana, Carpinus caroliniana, Carya tomentosa, Ilex opaca, Oxydendrum arboreum, Polystichum acrostichoides, Asplenium platyneuron, Quercus alba, Pinus virginiana, Tipularia discolor, Smilax sp., Euonymus americanus, Liquidambar styraciflua, Liriodendron tulipifera, Quercus coccinea, Acer rubrum, Quercus falcata, Nyssa sylvatica, Prunus serotina, Chimaphila maculata, Goodyera pubescens and Pinus strobus (Haney 2015). Steep hill and along right-of-way (Bassette 2003).

Element Occurrence Report

EO ID 20023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22938

Min. Elevation	940.00	**feet**	287.00	**meters**
Max. Elevation	970.00	**feet**	295.66	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	NCDOT OR PRIVATE	
US Department of T		

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Medium threat noted from Lonicera japonica at SW2. Moderately low risk from Lonicera japonica and Ligustrum sinense at SW1 and NW sites. Low degree of threat from Rosa multiflora, Ligustrum sinense, and Lonicera japonica at the 15th avenue site. (Haney 2015)

Additonal Topics "U-2307 ([Principal] EO 173 [sub EO 31]) was expected to have significant impacts on a large population of H. naniflora in Catawba County. It was expected that a population of 10,700 plants would be lessened by 5,400 as a direct result of the realignment of multi-lane road. Project construction is ongoing and records for this population are insufficient for field verification at this time. While this population loss was mitigated by the purchase of 25 acres at Murray's Mill, it is recommended that a follow-up survey is conducted at the project location to determine actual impacts after construction is completed" (HDR personnel, 2005). "U-2307C... was completed in December 1997...permits authorized impacts to the entire DFHL [Hexastlyis naniflora] population. The project affected all or portions of...[EO] 031...Upon reviewing the site, it was determined that the project's...population was not completly destroyed. Part of the...population situated outside of the project's righ-of-way has now been impacted by apparent clearing activities. Small fragments of the original DFHLpopulation currently exist ib a steep hill near the project as well as along the project's right-of-way limits. These small fragments are unlikely to be impacted from future development due to their locations (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 20023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22938

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G15DOT03NCUS	Haney, Matt. 2010 Hexastylis naniflora (Dwarf-Flowered Heartleaf) Extension of 15th Avenue, S.E. (Former TIP U-2307C, Element Occurrence No. 31) Inventory and Monitoring Report Catawba County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 10/13/2015 12:00:00AM
Transcribed By JLA **Transcription Date** 9/12/1997 12:00:00AM
Manual File Note

Mapping

Paper Mapping By JLA **Paper Mapping Date** 3/1/1997 12:00:00AM
Digital Mapping By JLA **Digital Mapping Date** 6/23/2016 11:32:34AM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	10.6061211124
Hectares	4.29215156002
WATERSHED	191 - 03050102
MAPSHEET	39024 - 35081-F3
COUNTY	1834 - NCCATA
HUC_12	030501020302

Record Maintenance

Element Occurrence Report

EO ID 20023 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22938

Record Create User	JLA	**Record Create Date**	9/12/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	6/23/2016 6:15:40PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 19611 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22526

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 47 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 34778 **Parent EO Shape ID** 150,216.00 **Parent EO Number** 302

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

South Fork Catawba River: tributary at NC 150 (Sub EO of EO 302)
NC DOT project R-617C

Directions

South Fork Catawba River: tributary at NC 150. Adjacent to NC 150 (south of highway) near the intersection with SR 1406 (Gastonia Highway) approximately 250 feet south of the highway on the north-facing side of an unnamed stream.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D2	Lincolnton East	1		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 19611 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22526

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30200	2005; NCNHP	South Fork Catawba	Line	Estimated	25.00	Meters		GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1999

Surveyor

Surveyor

Chris Rivenbark, NC Dept of Transportation
Misty Franklin, NHP
Brenda Wichmann, NHP

Element Occurrence Report

EO ID 19611 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22526

Survey Date 2005-05-11
Last Observation Date 2005-05-11 **First Observation Date** 1999-03-29
EO Data 2005: 5 plants counted on 11 May 2005 by Franklin and Wichmann including 1 very large plant with 13 flowers (Franklin and Wichmann 2005).
1999: Fewer than 10 clumps seen in a 3000 square-foot area, with flowers on 29 March 1999 (Rivenbark et al 1999).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO 1 very large plant with 13 flowers (Wichmann and Franklin 2005).
Condition Rating
Size of EO 5 plants (Wichmann and Franklin 2005).
Landscape Context Narrow strip of woods between a residential yard and field (Franklin and Wichmann 2005).

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2005-05-11
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Narrow strip of woods between a residential yard and field (Franklin and Wichmann 2005). Moist,north-facing, mid-slope of stream in poor quality Dry Mesic Oak-Hickory Forest with Quercus alba, Oxydendron arboreum and Chimaphila maculata (Rivenbark et al 1999).

Min. Elevation	850.00	**feet**	259.00	**meters**
Max. Elevation	860.00	**feet**	262.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
State/provincial gove	NC Department of Transportation	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics EO is associated with NC DOT project R-617C, see U05HDR01NCUS (Wichmann 2005). Population to be relocated to Indian Creek Wetland Mitigation site (HDR personnel 2005).

Element Occurrence Report

EO ID 19611 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22526

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
F99CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/26/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	8/11/2000 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	8/11/2000 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/26/2015 2:32:18PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020504
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requesto
LATITUDE_DD	Not processed per agreement with Plaintiff/Requesto
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requesto
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requesto
UTM_EASTING	Not processed per agreement with Plaintiff/Requesto
UTM_NORTHING	Not processed per agreement with Plaintiff/Requesto
UTM_ZONE	Not processed per agreement with Plaintiff/Requesto
Acreage	1.00185352973
Hectares	0.405436364997
WATERSHED	191 - 03050102
MAPSHEET	39756 - 35081-D2
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 19611 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22526

Record Create User	JLA	**Record Create Date**	8/11/2000 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	12/11/2015 11:11:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 19217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22132

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 27 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork, Prospect Ridge

Directions

South Fork Catawba River: Henry Fork, Prospect Ridge. PROSPECT RIDGE: ABOUT A 10- TO 15-MINUTE WALK DOWNHILL FROM THE BALLPARK BEHIND LAUREL CREEK CHURCH. THE PLANTS OCCUPY THE LOWER SLOPES SOUTH AND SOUTHWEST OF THE CHURCH AND SOUTH AND EAST OF THE CLEARCUT (MOYE 1994).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese	4		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 19217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22132

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Confirmation of ID needed; identification of this EO has been questioned by James Padgett, No response received from landowner when contactect by Franklin for 2005 site visit (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
19216	1987; Moye	South Fork Catawba	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type
Qualitative ground survey

EO Survey Note
1987, 1990, 1991

Surveyor

Surveyor
Bill Moye

Survey Date 1991-Spring

Last Observation Date 1991-Spring **First Observation Date** 1987-Spring

EO Data Present with H. minor; difficult to separate, scattered over lower third to half of hillside; seen Spring 1987, 1990, 1991 (MOYE 1994).

Element Occurrence Report

EO ID 19217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22132

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO No data, ID not confirmed (2005)
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 1991-04-01
EO Rank Comments No data, ID not confirmed (2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Low hillside with remarkable diversity with xeric habitats above, mesic ones below, and low elevation seeps near margins of narrow waterway through valley. Dry-mesic oak-hickory forest transitional to wetter creekside habitats. Mesic west- and southwest-facing slopes to nearly flat lower slopes, filtered to shaded light. Dominants are Pinus strobus, Quercus, Acer rubrum, Oxydenrum arboreum, Nyssa sylvatica, Ilex opaca, Kalmia latifolia, Vaccinium pallidum, Vitis rotundifolia, Smilax. High diveristy of herbs (See report) (Moye 1994).

Min. Elevation	1,220.00	**feet**	372.00	**meters**
Max. Elevation	1,260.00	**feet**	384.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** ? - Questionable **TNC involvement**
Protection Comments Floral diverstiy and proximity to xeric pine-oak heath forests, white pine forests, and low elevation seeps warrant some protection (1994).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments Some past human disturbances (road, Vinca minor), but in better shape that much of surrounding area which was clearcut (1994).

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments Property owner contacted prior to 2005 site visit, no response, no visit (Franklin and Wichmann 2005).
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 19217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22132

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U94MOY01NCUS	Moye, W.S. 1994. Inventory of the South Mountains, North Carolina. Conservation Trust for North Carolina, Raleigh, NC. NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/27/2015 12:00:00AM
Transcribed By	MJR	**Transcription Date**	10/13/1995 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	MJR	**Paper Mapping Date**	10/2/1995 12:00:00AM
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39022 - 35081-F5
WATERSHED	191 - 03050102
ACREAGE	7.71
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
Site_Code	1062
SITE	1062.000000 - S.USNCHP*2085
HUC_12	030501020101
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 19217 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 22132

Record Create User	MJR	**Record Create Date**	10/3/1995 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	1/6/2016 2:37:14PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 18888 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21803

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 33 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Tributary to Rhodhiss Lake, John's River Waste Management Facility.

Directions

Catawba River: Tributary to Rhodhiss Lake, John's River Waste Management Facility. John's River Waste Management Facility. The northern subpopulation is located along Long Creek and the southern population is next to a sediment basin.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G6	Morganton North			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 18888 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21803

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
62247	1995-09-19, Newb	Southern protected	Polygon	Delimited				1998 aerial photos
62246	1995-09-19, Newb	Northern protected	Polygon	Delimited				2008 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996

Surveyor

Surveyor
C. Huysman, Soil & Environmental Consultants
Gill Newberry

Element Occurrence Report

EO ID 18888 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21803

Survey Date 1996-05-03
Last Observation Date 1996-05-03 **First Observation Date** 1995-09-19
EO Data Huysman and Newberry observed a total of approximately 275 plants in two subpopulations: approximately 200 plants located in the northern portion of the facility and another 75 plants in the southern portion of the facility adjacent to a sediment basin near an old cemetery on 05 May 1996 (Huysman & Newberry 1996; also USFWS Log No. 4-2-96-084).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Endangered from land fill expansion (Newberry 1996).

Condition Rating
Size of EO Approximately 275 plants (1996)
Landscape Context The population in the southern portion of the facility is in degraded habitat adjacent to an existing landfill and old roadbed.

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 1996-05-03
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description The population in the southern portion of the facility is in degraded habitat adjacent to an existing landfill and old roadbed.

Min. Elevation	1,000.00	**feet**	305.00	**meters**
Max. Elevation	1,160.00	**feet**	354.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments This occurrence is adjacent to Johns River Game Land MA.ID 1352 (Amoroso 2015).

Ownership

Owner Type	Owner Name	Owner Note
Unknown	BURKE COUNTY PUBLIC WORKS	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Burke County proposed a construction and demolition landfill expansion at the John's River Waste Management Facility in 2010; it is not known whether this would impact the rare plant population (Mitchell pers. comm. 2010).

Additonal Topics

Element Occurrence Report

EO ID 18888 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21803

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/14/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	9/17/1997 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	4/1/1997 12:00:00AM
Digital Mapping By	SCM	**Digital Mapping Date**	5/11/2012 11:38:52AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1828 - NCBURK
WATERSHED	190 - 03050101
HECTARES	4.023359
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
ACREAGE	9.941898
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
MAPSHEET	38655 - 35081-G6
HUC_12	030501010801
HUC_12	030501010703

Record Maintenance

Element Occurrence Report

EO ID 18888 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21803

Record Create User	JLA	**Record Create Date**	9/17/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/28/2015 11:09:10PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 18850 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21765

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 14 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek & Grog Creek, Sub EO of EO 100).
NCDOT TIP: B-2119
NCDOT Broad River Mitigation Tract

Directions

Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek and Grog Creek, north of SR 1195 and south of Middle Sandy Run Creek and Grog Creek. This is a sub EO of Principal EO 100 (Wichmann 2005). Middle Sandy Run Creek just southeast and southwest of its confluence with Grog Creek, north of SR 1195; population extends for approximately 700 meters (Wichmann 2005). North-facing bluff along Sandy Run Creek just northwest of SR 1195 bridge across creek.

Locators

Latitude Not processed per ag **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 18850 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21765

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

GIS shapefiles submitted were used to create this source feature (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Individual plants not counted, estimates only (Wichmann per. com. with Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30220	1981; Gaddy	Broad River/Sandy	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981, 2001

Element Occurrence Report

EO ID 18850 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21765

Surveyor

Surveyor

James Padgett, ASU
L.L. Gaddy
Gill Newberry
Matt Jones, Garner-Webb University undergrad.

Survey Date 2009-06

Last Observation Date 2009-06 **First Observation Date** 1981-05

EO Data 2009: Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009).
2001: Large number of plants seen along steep slopes in April 2001 (Padgett pers. comm to Wichmann 2005).
2000: 177 plants total: 87 plants within project corridor and 90 plants outside of project corridor on 30 October 2000 (Bassette 2003).
1995: Newberry observed 20 plants in 1995 but noted that heavy tree fall had made the area hard to survey [east part of Newberry's occurrence overlaps EO 237] (Newberry 1996).
1981: Nearly 200 clumps total along steep slopes for this EO and EO 237; plants doing best around canopy openings; many seedlings seen, especially in light gaps (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Large number of plants seen (Padgett 2001). 177 plants (2000). 200 clumps (Gaddy 1981).

Landscape Context In a mature hardwood forest, with scattered openings and tree falls, Carya sp., Quercus alba, Liriodendron, rich herb layer.

EO Rank C? - Possibly fair estimated viability **EO Origin Subrank**

EO Rank Date 2001-04

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description In a mature hardwood forest, with scattered openings and tree falls, Carya sp., Quercus alba, Liriodendron, rich herb layer.

Min. Elevation	680.00	**feet**	207.00	**meters**
Max. Elevation	740.00	**feet**	225.55	**meters**
Observed Area	5.00	**acres**	2.02	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments EO appears to fall outside of NC DOT Broad River Tract mitigation site boundary (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Element Occurrence Report

EO ID 18850 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21765

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Housler Tract	730 acre tract surveyed in 2001 with NCDOT (Padgett 2005)
State/provincial gove	NC DOT	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

Topic Keywords

Keywords
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N

Specimen

Specimen Description
HERB.BOON 15996, J E PADGETT APRIL 10, 2001
HERB.GWC 0640, J E PADGETT APRIL10, 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Robinson **Version Date** 11/18/2015 12:00:00AM

Transcribed By **Transcription Date** 1/1/1982 12:00:00AM

Manual File Note

Mapping

Paper Mapping By - **Paper Mapping Date** 1/1/1982 12:00:00AM

Digital Mapping By BLW **Digital Mapping Date** 11/14/2005 2:41:04PM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 18850 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21765

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	4.121281
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV
ACREAGE	10.183867
HUC_12	030501050505

Record Maintenance

Record Create User	ASW	**Record Create Date**	1/18/1989 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	4/15/2016 6:12:57PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 18569 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21484

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 49 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River/Sandy Run Natural Areas: Mouth of Sandy Run Creek, NC DOT sites CC and DD (Sub EO of EO 100).
NCDOT TIP: R-2824
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Mouth of Sandy Run Creek. This is a sub EO of Parent EO 100 (Wichmann 2005). 3 miles south of Boiling Springs on the east bank of Sandy Run near its confluence with the Broad River (Padgett 2001). Sub-occurrence 1: at the confluence. Sub-occurrence 2: ca. 0.25 mile northeast of the confluence, along an intermittent stream (Oakley 2001); James Padgett's 2001 Site M (Padgett Map); NC DOT Broad River Tract Site CC (Bassette 2003). Subpop 3: 0.1 mile north of the confluene; James Padgett's 2001 Site I (Padgett Map). NC DOT Broad River Tract/IP mitigation site DD (Bassette 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South	5		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 18569 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21484

Physiographic Province

Physiographic Province

PD

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

The smallest of the subpopulations was visited in 2011 with the Broad River Greenway and no plants were located (Padgett 2015). --- Two sub-populations located about 400 meters apart make up this EO; Several sub-EOs are also associated with this EO; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Individuals not counted, estimates only (Wichmann per comm. with Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30226	2003; NCDOT Cor	Broad River Tract, S	Polygon	Delimited				GPS, 3-meter accu
30227	2003; NCDOT Cor	Broad River Tract, S	Polygon	Delimited				GPS, 3-meter accu
89572	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89571	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 18569 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21484

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2003

Surveyor

Surveyor
Oakley
James Padgett, ASU

Survey Date 2012-03-28

Last Observation Date 2012-03-28 **First Observation Date** 2001-02-04

EO Data 2012: 748 plants were counted at population CC and 44 plants were counted at population DD on 28 March by NCDOT biologists (Bassette).
2011: The smallest sub-population right along the creek was visited in May 2011 by Padgett, with no plants being located at this site which had previously had 5-10 plants (Padgett 2015).
2008: 538 plants total observed at sites 2 (CC) and 3 (DD) by NCDOT biologists in April 2008 (Bassette 2009).
2003: 667 observed plants over 1.6 acres (HDR 2003). 707 plants observed [estimated] by NC DOT (Bassette 2003).
2001: Subpop 1: Fewer than 200 clumps observed in a 600 by 600 foot area, with buds on 4 February (Padgett 2001); Subpop 2: Estimate of 200 plants in bud on 6 March in Dry-Mesic Hardwood Forest (Oakley 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Population CC appears to be in excellent condition. Plant counts here have increased since the 2008-2009 surveys. Many robust rosettes are present at this location. The amount of downed debris in the mid slope portion of this population may have masked
plants resulting in a conservative talley (Bassette 2015). Plants seen in flower along the confluence of Sandy Run Creek and Broad River in 2002 and 2003 (Padgett 2003). With buds on 4 February (Padgett 2001).

Condition Rating

Size of EO 538 plants at two sites (2008). 707 plants observed by NC DOT (Bassette 2003).Subpop 3: Estimated around 300 plants (Padgett 2001). Subpop 1: Fewer than 200 clumps (Padgett 2001); Subpop 2: Estimate of 200 (Oakley 2001).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-04

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Subpop1: north to northwest facing steep creek bank with Hepatica americana, Kalmia latifolia, Acer rubrum, and Quercus sp.; Subpop 2: Dry-Mesic Hardwood Forest; presumably the same intermittent drainage as pop 1, gentle north-facing slope near head of intermittent drainage, no Kalmia present but extending upslope to edge of Pinus-Vaccinium-Epigaea habitat (Oakley 2001).

Min. Elevation	640.00	**feet**	195.07	**meters**
Max. Elevation	720.00	**feet**	219.46	**meters**
Observed Area	10.00	**acres**	4.05	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

Element Occurrence Report

EO ID 18569 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21484

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments NC DOT mitigation site (in part); see Reference U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005). Land is reported to be sold to developers (2001).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N
889	Broad River Greenway		Y - Yes	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Cleveland County	

Owner Comments This site is now part of the Broad River Greenway. -- MR. WHITFIELD

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 18569 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21484

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	4/27/2016 12:00:00AM
Transcribed By	JTF	**Transcription Date**	3/1/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/20/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	4/19/2016 2:17:59PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
PHYSIOGRAPHIC_PROVINCE	2 - PD
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.80518049312
Hectares	0.730531754972
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	JLA	**Record Create Date**	2/21/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 18568 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21483

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 50 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: tributaries between Flint Hill and Jolly Mountain (Sub of 100).
NCDOT TIP: B-2119
NCDOT TIP: R-2707 US 74 Shelby Bypass
NCDOT Broad River Tract Mitigation

Directions

Broad River/Sandy Run Natural Areas: unnamed tributaries between Flint Hill and Jolly Mountian. NC DOT Broad River Tract Site: HH. This is a sub EO of principal EO 100 (Wichmann 2005). About 3 miles south of Boiling Springs, on the north to northwest slope of Jolly Mountain.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South	6		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 18568 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21483

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Species verified while in flower in 2001 during surveys for Hexastylis naniflora with NCDOT (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30235	2003; NCDOT Cor	Broad River Tract, .	Polygon	Delimited				GPS, 3-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor

NC DOT Personnel
James Padgett, ASU
Matt Jones, Garner-Webb Univ. undergrad

Element Occurrence Report

EO ID 18568 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21483

Survey Date 2012-04-02
Last Observation Date 2012-04-02 **First Observation Date** 2001-02-04
EO Data 2012: 4712 plants were counted on 2 April (Bassette 2015).
2009: Plants observed to be present by Jones in January, April, and June 2009; no count made (Jones 2009).
2008: 1,397 plants counted by NCDOT biologists in April 2008 (Bassette 2009).
2003: 919 plants observed by NC DOT Personnel (Bassette 2003).
2001: About 1000 clumps estimated over several acres, in bud on 4 February (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description North to northwest facing slope of Jolly Mountain with Hepatica americana, Kalmia latifolia, Acer rubrum, and Liriodendron tulipifera (lower slopes).

Min. Elevation	720.00	**feet**	219.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	10.00	**acres**	4.05	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Part of this site is still owned by a developer (The top of Jolly Mountain, 100 acres), but most of the site is now part of the Broad River Greenway after it was purchased and dedicated to the greenway by NC DOT in 2003 (Padgett 2005). --Land is reported to be sold to developers (2001).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
889	Broad River Greenway		Y - Yes	N
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	International Paper	
Local government	Broad River Greenway	Cleveland County and the Town of Boiling Springs.

Owner Comments International Paper

Element Occurrence Report

EO ID 18568 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21483

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
FNDCLE01NCUS	Oakley, S.C. 2002. Field surveys for Cleveland County natural areas inventory, 2002.	N
U01HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2001. Feasibility Study: Broad River Study Area, Cleveland County, North Carolina.	N
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/18/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/1/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/20/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/29/2015 12:45:27PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Element Occurrence Report

EO ID 18568 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 21483

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050506
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	7.61024063915
Hectares	3.07975987501
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User JLA **Record Create Date** 2/21/2001 12:00:00AM

Last Modified By JTF **Last Modified Date** 5/31/2016 9:05:22AM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 17373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20288

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 10 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2256	Kudzu Farm Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: Dills Creek, Kudzu Rare Plant Site (This is a sub EO of 099).
Kudzu Cow Farm (per Gaddy, 1981; in part)
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Dills Creek, Kudzu Farm Rare Plant Site: This is a sub EO of parent EO 099 (Wichmann 2005). In three suboccurrences: Suboccurrence A: SR 1122, about 0.8 road mile west of its intersection with SR 1111, along ravine draining into a tributary of Dills Creek; Suboccurrence B (former Subpopulation 1): Creekhead [east of triburary to Dills Creek], [located] approx 0.2 [air] mile south[southeast] of SR 1122, where road [SR 1112] crosses a small stream [tributary of Dills Creek], plants were found growing on banks of an eroded creek, hanging off the steep banks; Suboccurrence C: Ravine west of tributary to Dills Creek, located about 0.2 air mile southwest of SR 1122, from where SR 1112 cross a small tributary of Dills Creek (Wichmann 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 17373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20288

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

This EO is comprised of three sub-occurrences (source features) which are located within 0.5 Kilometers of one another and are within the boundaries of the Kudzu Farm Rare Plant Site; Sub EO 181 was formerly subpopulation 2 of EO 010 but has been separated out as a sub EO since it is not within the Boundaries of the Kudzu Farm Rare Plant Site; All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68195	Padgett 2012	Kudzu Farm Rare P	Polygon	Delimited				GPS, 10-meter acc
68199	Padgett EO 10 plot	Kudzu Farm Rare P	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 17373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20288

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981, 2001, 2005, 2012, 2013

Surveyor

Surveyor
L.L. Gaddy
James Padgett, ASU (2001), NHP (2005)
Gill Newberry
Kimberly Israel, NHP

Survey Date 2014-05-20

Last Observation Date 2014-05-20 **First Observation Date** 1981-05

EO Data All sites combined: Padgett counted 3,094 plants within monitoring plots of Parent EO 99 on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area. Of the total, 388 plants were counted within the permant plot located at Sub EO 10 (Padgett 2014).
2013: Monitoring data is part of monitoring data for Principle EO 99 (Padgett 2013). 438 plants counted in monitoring plot at Sub EO 10 representing 10% of the population, by Padgett and Israel on 17 July 2013, for an estimate of 4000+ plants in the site.
2012: 186 plants were counted in permant plots by Padgett on 17 July 2012 after remapping and installing permant plot. Plant counts may have been low due ot the recent timber thinning and weedy growth (Padgett 2012).
2005: 500-750 plants estimated on May 2005 (Padgett 2005).
2001: Estimated 700 clumps plus single and double leaves present from the head of the stream to 120-150 yards downstream, plants in leaf and flower on 27 March (Padgett 2001).
1995: Gaddy's Cow Farm Site: 200-300 plants estimated at this site by Newberry in 1995 (Newberry 1996).
1981: About 200-300 plants growing on banks of eroding creek, hanging off steep banks; exceptionally vigorous, with 10-15 flowers on many plants, perhaps fertilized by cultivated field above site (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO	Exceptionally vigorous, with 10-15 flowers on many plants, perhaps fertilized by cultivated field above site (Gaddy 1981).
Condition Rating	
Size of EO	500-750 estimated (Padgett 2005).
Landscape Context	Kudzu Rare plant site, roadside, and cultivated fields (Wichmann 2005 from GIS layers).

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2013-07-17

EO Rank Comments EO rank based on EO rank specs for this species and most current EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description This forest community was cut along the ridgetop and thinned along the stream where the EO is located in 2011 (Padgett). -- Mid-aged Dry-Mesic Oak--Hickory Forest commmunity along stream and moderatley steep north-facing slope. Canopy is dominated by Quercus alba, Quercus coccinea, Liriodendron tulipifera, Acer rubrum and Fagus grandifolia. Other associated species include Aralia nudicalus, sanguinaria canadensis, Polystichium achrostichoides, Hexastylis arifolia variety arifolia, and Goodyear pubescens (Padgett 2005). Creekhead, middle-aged canopy of Quercus alba, Acer rubrum, Fagus grandifolia. Other associated species include Rhododendron nudiflorum, Sanguinaria canadensis, Polystichum acrostichoides and Lonicera japonica (Padgett 2001).

Min. Elevation	720.00	**feet**	219.46	**meters**
Max. Elevation	800.00	**feet**	243.84	**meters**
Observed Area	4.00	**acres**	1.62	**hectares**

Protection

Element Occurrence Report

EO ID 17373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20288

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments This EO has no formal protection, but the current owner is aware of the conservation value of this EO (Padgett 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	W. HENRY EDWARDS, 828-245-9752 - ROUTE 1, BOX 18	2012, 2015 permission to survey granted by phone and in person

Owner Comments .

OwnerInfo_BCD Y

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F14PAD01US	Padgett, James 2014 Field Survey and Field Notes	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description
HERB.BOON 16530, J E PADGETT APRIL 2001 (MOUNTED FLOWERS SHOWING RIDGES AND RETICULATIONS)
HERB.BOON 15993, J E PADGETT APRIL 02, 2001
HERB.GWC 0639, J E PADGETT APRIL 02, 2001
HERB.GWC 0643, J E PADGETT APRIL 02, 2001

CDREV_BCD N

Element Occurrence Report

EO ID 17373 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20288

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/10/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	1/1/1982 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/8/2001 12:00:00AM
Digital Mapping By	KAI	**Digital Mapping Date**	6/25/2013 11:06:53AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2256.000000 - S.USNCHP*3372
SITE	2493.000000 - S.USNCHP*4588
Site_Code	52941
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
ACREAGE	2.08434
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	0.843506
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40482 - 35081-B8
WATERSHED	194 - 03050105
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/8/1987 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	3/18/2016 6:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 17372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20287

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 9 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N

Survey Site

Survey Site Name

Broad River: Hensons Creek Natural Area [Henson's Creek Ravine] (Sub EO of 099)
Henson's Creek Ravine (per Gaddy, 1981)

Directions

Broad River: Hensons Creek Natural Area, west of SR 1106 and south of the Broad River, at Hensons Creek Ravine. This is a sub EO of parent EO 099 (Wichmann 2005). Hensons Creek Ravine: Ravine and bluff located along west side of SR 1106 along Hensons Creek, for 0.5 mile above its confluence with Broad River.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 17372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20287

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Site visited in May of 2012 to try to ontain permission ot monitor it (Padgett 2015). -- All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28534	2005; Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005

Surveyor

Surveyor
James Padgett, NHP
L.L. Gaddy
Gill Newberry

Element Occurrence Report

EO ID 17372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20287

Survey Date 2012
Last Observation Date 2005-03-05 **First Observation Date** 1981
EO Data 2012: Padgett visited the site and observed plants in 2012, however plants were not counted or estimated (Padgett 2015).
2005: Padgett estimated 500 plants estimated in the ravine on 05 March 2005 (Padgett 2005).
1995: Newberry estimated the population to be about 500-600 plants in 1995 (Newberry 1996).
1981: Over 1000 clumps over a 10 acre area; plants located within the ravine and on a bluff, but no plants were found along the creek (Gaddy, 1981). One of the largest known populations (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Timbering occurring on uplands (1996).

Condition Rating
Size of EO
Landscape Context

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**

EO Rank Date 2005-03-05
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Dry Oak-Hickory Forest community in a moderately sloping ravine. Associated species include Quercus falcata, Quercus alba, Pinus echinata, Pinus virginiana, Oxydendrum arboreum, Cornus flordia, Polystichium acrostichoides, and Kalmia latifolia. Cut-over located to the west. (Padgett 2005). Ravine and bluff, with cut-over to mature canopy of Pinus echinata, Quercus alba, Liriodendron; Shrub layer of Kalmia.

Min. Elevation	721.78	**feet**	220.00	**meters**
Max. Elevation	880.00	**feet**	268.22	**meters**
Observed Area	10.00	**acres**	4.05	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Due to a change in ownership, no registry agreement is currently in place (Padgett 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Partnership (legal en	Keith Hawthorne	Belmont, NC. Hawthorne Ford. 1-800-721-8434
Partnership (legal en	Father-in-Law of Keith Hawthorne	

Owner Comments
OwnerInfo_BCD Y

Additional Topics

Element Occurrence Report

EO ID 17372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20287

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

HERB.BOOM 15995, J E PADGETT APRIL 06, 2001
HERB.BOON 16388, J E PADGETT APRIL 20, 2002
HERB.GWC 0641, J E PADGETT MAY 13, 2001
HERB.GWC 0642, J E PADGETT MAY 13, 2001
HERB.BOON 16529, J E PADGETT MARCH AND APRIL 2001 (FLOWERS MOUNTED SHOWING RIDGES AND RETICULATIONS)
HERB.BOON 15997, J E PADGETT MAY 13, 2001
HERB.BOON 15998, J E PADGETT MAY 13, 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 1/12/2016 12:00:00AM
Transcribed By **Transcription Date** 1/1/1982 12:00:00AM
Manual File Note

Mapping

Paper Mapping By JLA **Paper Mapping Date** 10/8/2001 12:00:00AM
Digital Mapping By SCM **Digital Mapping Date** 7/21/2014 4:21:32PM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 17372 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 20287

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2077.000000 - S.USNCHP*335
MANAGED_AREA	461.000000 - M.USNCHP*293
MA_Code	JTF
SITE	2493.000000 - S.USNCHP*4588
Site_Code	2077
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	10.7737503365
Hectares	4.35998880494
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
PARENT_EO_ID	54507

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/8/1987 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	1/12/2016 6:12:08PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 16879 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19794

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 61 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Unnamed tributary at SR 1115 & 1116 (This is a sub EO of 099).

Directions

Broad River: unnamed tributary at SR 1115 and 1116. This is a sub EO of parent EO 099 (Wichmann 2005). East of Spicer Rd. (SR 1115), Along a tributary 0.3 mile north of the Broad River, 0.6 mile south of the intersection of SR 1115 and SR 1116. This site is along a stream that leads to a substation recently placed in by the Riverstone Development Group.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee	4		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 16879 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19794

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28549	2002; Padgett	Broad River: unnan	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2002-02-03

Last Observation Date 2002-02-03 **First Observation Date** 2002-02-03

Element Occurrence Report

EO ID 16879 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19794

EO Data 2002: Estimated between 750-1000 single leaves or multiple leaf clumps, in bud on 3 February (Padgett 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2002-02-03

EO Rank Comments EO rank based on EO rank specs for this species and most recent EO data (Wichmann 2005). Rank lowered [to a BC] due to habitat quality; although many plants, the population is within a pine plantation however there are several small streams which are buffered by hardwoods.

EO Rank Specifications Version Used

Description

EO Type

General Description Mixed hardwoods along stream within plantation of loblolly pine. associated species include Ilex opaca, Fagus grandifolia, Quercus alba, Hepatica americana, Prunus sp, Cornus florida, and several fern species (Padgett 2002).

Min. Elevation	709.00	**feet**	216.00	**meters**
Max. Elevation	768.00	**feet**	234.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	STONECUTTER CORPORATION	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Population is along the edge of pine plantation and may be impacted from incompatible forestry practices (Robinson 2016).

Additonal Topics

Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 16879 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19794

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	4/15/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	12/17/2002 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:19:59PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	6.62079118727
Hectares	2.67934326998
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 16879 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19794

Record Create User	JLA	**Record Create Date**	12/17/2002 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	4/15/2016 1:13:05PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 16776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19691

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 58 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Camp Creek, south SR 1120

Directions

South Fork Catawba River: Camp Creek, south of Greedy Road (SR 1120). "North on Hwy 127 from Prospect Crossroads to Greedy Rd. Left on Greedy road to Hudson Road. Upstream from Hudson Rd. approximately 500 meters. Growing along wooded ridge above Creek" (Padgett and Gillespie 2002).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F4	Longview	15		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 16776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19691

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28654	2002; Padgett	South Fork Catawb	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Surveyor
James Padgett, ASU
Emily Gillespie, ASU

Survey Date 2002-04-18

Last Observation Date 2002-04-18 **First Observation Date** 2002-04-18

Element Occurrence Report

EO ID 16776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19691

EO Data 25-50 clumps (some singles) in leaf and flower on 18 April 2002; along 100 feet of wooded ridge; seedlings present (Padgett and Gillespie 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO In leaf and flower on 18 April 2002;seedlings present (Padgett and Gillespie 2002).

Condition Rating

Size of EO 25-50 clumps (some singles) in leaf and flower on 18 April 2002; along 100 feet of wooded ridge; seedlings present (Padgett and Gillespie 2002).

Landscape Context Along 100 feet of wooded ridge bordered by pasture to one side and the highway across the creek on the other side (Padgett and Gillespie 2002).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2002-04-18

EO Rank Comments EO rank based on EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Mixed hardwoods with Quercus alba, Quercus coccinea, and Liriodendron tulipifera in the canopy. The understory was comprised of canopy species: Acer rubrum, Cornus florida, Sassafras albidum, and Prunus serotina. Shurbs present were Kalmia latifolia and Vaccinium arboreum. Vitis rotundifolia, Toxidocdendron radicans ans Smilax were vines present along the creek and slope. Herbs include Hexastylis naniflra, Hepatica americana, Polystichum acrostichoides, and Viola spp. The soils are a sandy loam (Padgett and Gillespie 2002).

Min. Elevation	950.00	**feet**	289.56	**meters**
Max. Elevation	1,010.00	**feet**	307.85	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual		

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Element Occurrence Report

EO ID 16776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19691

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

HERB.BOON 16387, J E PADGETT AND EMILY GILLESPIE APRIL18, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/27/2015 12:00:00AM
Transcribed By	J. Amoroso	**Transcription Date**	6/11/2002 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	HEL	**Paper Mapping Date**	6/11/2002 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:26:38PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020202
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	4.24684986934
Hectares	1.71864182001
WATERSHED	191 - 03050102
MAPSHEET	39023 - 35081-F4
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 16776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19691

Record Create User	HEL	**Record Create Date**	6/11/2002 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	10/27/2015 11:52:14AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 16646 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19561

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 46 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22373 **Parent EO Shape ID** 62,937.00 **Parent EO Number** 232

Site/Directions

Sites

Site ID	Name	Auto-calculated
2237	Buffalo Creek Rare Plant Site	N

Survey Site

Survey Site Name

Buffalo Creek Rare Plant Site, N of SR 1908 (sub EO of EO 232)
NCDOT B-2816
NCDOT TIP: R-2824

Directions

Buffalo Creek Rare Plant Site, 0.1 to 0.2 miles north of SR 1908 and New Prospect Church. This is a sub EO of Parent EO 232 (Wichmann 2005). On the east side of Buffalo Creek, 0.1 mile north of SR 1908.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 16646 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19561

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. EO85 occurs 2.1 km to the north (Amoroso 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
26303	1998; NCDOT	Buffalo Creek Rare	Polygon	Delimited				1:24,000 topos (pa

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1998, 2001, 2005

Surveyor

Survevor

Tim Savidge, NC DOT
James Padgett, ASU (2001), NHP (2005).
HDR personnel
HARP personnel

Element Occurrence Report

EO ID 16646 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19561

Survey Date 2005-11-15
Last Observation Date 2005-11-15 **First Observation Date** 1998-05-18
EO Data 2005: Estimated 500 plants; this EO has remained generally unchanged since 2001 visit (Padgett 2005).
2005: "It is estimated only 50 plants remain at this site" (HDR and HARP personnel, 2005).
2001: Estimate 500+ plants in 2001 (Padgett 2003).
1998: Over 1,000 densly spaced plants in a 2.5 ac site counted by Savidge on 18 May 1998 (Bassette 2003). Over 1000 plants densely spaced over 1 hectare; in flower on 18 May (Savidge 1998).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments Site visited and flower and leaf materials collected for research (Padgett 2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 500 plants; this EO has remianed generally unchanged since 2001 visit (Padgett 2005). only 50 plants remain at this site (HDR and HARP personnel, 2005). estimate 500+ plants in 2001 (Padgett 2003). Over 1,000(Bassette 2003). Over 1000 plants (Savidge 1998).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2005-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Quercis alba, Quercis coccinea, Liriodendron tulipifera, Acer rubrum in canopy. Cornus flordia, Oxydendrum arboreum in the understory. Kalmia latifolia is thick in the shrub layer. Herbs included Goodyeara pubescens, Polystichium acrostichoides, Prenanthes sp., Sanicula sp., Chimaphilia maculata, and others (Padgett 2001). Associated with Kalmia latifolia, very high quality community with little disturbance (Savidge 1998).

Min. Elevation	780.00	**feet**	238.00	**meters**
Max. Elevation	860.00	**feet**	262.00	**meters**
Observed Area	2.50	**acres**	1.01	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property (1998).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments

Element Occurrence Report

EO ID 16646 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19561

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "B-2816 (EO 46) is a bridge replacement project that was slightly realigned and determined not to impact the Hexastylis population. However, the recent field visit showed that the previously mapped portion of the population no longer existed, possibly due to adjacent landowner maintenance such as bush hogging. Additionally, a new trail was cut through the site where some plants were found, and possibly contributed to the population disturbance. It appeared as though effects from the 2004 hurricane season activity also played a role in the degradation of site integrity and quality. It is estimated that only 50 plants remain at this site, as opposed to the thousand or more that was previously documented by NCDOT and NCNHP in 1998 and 2001" (HDR and HARP personnel, 2005). "B-2816: Situated along SR 1908, the project replaces Bridge No. 230 over Buffalo Creek...this project may affect all of or portions of [EO 046]...environmental permits associated with B-2816 do not authorize any impacts to DFHL near the bridge. An alternative that avoided direct impact to the DFHL population was chosen. The October 2001 field review indicated that no direct, indirect, or cumulative impacts have occurred on the DFHL population locations near the project" (Bassette 2003). The bridge replacement project was moved and will not affect this occurrence (1998).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description
HERB-NCDOT, T. SAVIDGE 18 MAY 1998.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By		**Transcription Date**	8/5/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	8/4/1998 12:00:00AM
Digital Mapping By	BLW	**Digital Mapping Date**	11/8/2005 5:14:32PM

Element Occurrence Report

EO ID 16646 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19561

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	52410
SITE	2237.000000 - S.USNCHP*3285
WATERSHED	194 - 03050105
LONGITUDE_DMS	[redacted]
UTM_EASTING	[redacted]
UTM_NORTHING	[redacted]
LATITUDE_DD	[redacted]
LONGITUDE_DD	[redacted]
UTM_ZONE	[redacted]
LATITUDE_DMS	[redacted]
HECTARES	4.120615
MAPSHEET	40122 - 35081-C4
ACREAGE	10.182222
COUNTY	1839 - NCCLEV
HUC_12	030501050802

Record Maintenance

Record Create User	JLA	**Record Create Date**	8/5/1998 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 16512 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19427

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 1 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
554	Brushy Creek Bluff	N

Survey Site

Survey Site Name
Brushy Creek Bluff

Directions

Broad River: Brushy Creek, Brushy Creek Bluff: On south side of creek, 3 miles south of Polkville, just south of junction of SR 1365 and SR 1363. North facing slope above Brushy Creek, east of bridge on Charles Eliot Road, 3 miles south of Polkville (Newberry 1995).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D6	Polkville	1		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 16512 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19427

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49054	1956, Ahles and Be	Brushy Creek Bluff	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981, 2001

Surveyor

Surveyor
L.L. Gaddy
Gill Newberry
James Padgett, ASU

Element Occurrence Report

EO ID 16512 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19427

Survey Date 2001-04-04
Last Observation Date 2001-04-04 **First Observation Date** 1956-04-19
EO Data 100-200 plants seen in flower by Padgett on 04 April 2001 (Padgett 2001). 200 PLANTS PRESENT IN 1995 (Newberry 1995). About 200 plants over one acre, no seedlings, seed production average (Gaddy 1981). Specimen collected by Ahles and Bell on 19 April 1956 (Ahles & Bell 1956).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments J. E. Padgett 2001, flower and leaf materials collected for reasearch at ASU. One of the discovery sites for the species.

EO Rank

EO Rank Factor Survey Data

Condition of EO In flower on April 4, 2001 (Padgett 2001). Trash littered throughout site (1995). Small road with old piles of garbage scattered along it lead to near the center of the site (Gaddy 1981).
Condition Rating
Size of EO 100-200 plants (Padgett 2001). About 200 plants over 1 acre (1981).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2001-04-04
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Trash and cattle on site (Newberry 1995). Bluff; canopy dominated by Quercus alba, Pinus echinata, Acer rubrum. Subcanopy dominated by Acer rubrum and Ilex opaca. Shrub layer dominated by Kalmia. Herb layer dominated by Lonicera japonica.

Min. Elevation	850.00	**feet**	259.08	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 16512 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19427

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

HERB.NCU 86889 & HERB.DUKE 166157, AHLES & BELL 11109, 19 APRIL 1956.
HERB.NCSC (HERB.GA), HARDIN ET AL.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	9/11/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/20/1991 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	AWK	**Paper Mapping Date**	3/20/1991 12:00:00AM
Digital Mapping By	SCM	**Digital Mapping Date**	4/22/2009 10:10:15AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 16512 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19427

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	554
SITE	554.000000 - S.USNCHP*837
WATERSHED	194 - 03050105
HECTARES	1.430644
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
ACREAGE	3.535184
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39752 - 35081-D6
COUNTY	1839 - NCCLEV
HUC_12	030501050701

Record Maintenance

Record Create User	AWK	**Record Create Date**	3/20/1991 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	3/8/2016 6:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 16347 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19262

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 5 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20296 **Parent EO Shape ID** 48,390.00 **Parent EO Number** 101

Site/Directions

Sites

Site ID	Name	Auto-calculated
328	Camp Creek Bluff	N

Survey Site

Survey Site Name

South Fork Catawba River: Jacob Fork, Camp Creek Bluff and Creekhead (Sub EO of EO 101).
Camp Creek Creekhead and Camp Creek Bluff (per Gaddy, 1981)

Directions

South Fork Catawba River: Jacob Fork, Camp Creek Bluff, east and west sides of SR 1910. This is a sub EO of principal EO 101 (Wichmann 2005). Camp Creek Bluff-Camp Creek CreekheaD SITE. Both sites about 1 mile north of junction with SR 1924, just south of Camp Creek and along SR-1910. Camp Creek Creekhead Site is on east side of SR 1910 and Camp Creek Bluff Site is on west side of SR 1910.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar	1		2,

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 16347 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19262

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Source features include GIS data from Padgett (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28476	2002; Padgett	Camp Creek Bluff	Polygon	Delimited				GPS, 3-meter accu
28477	2002; Padgett	Camp Creek Creekl	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981,1989
Quantitative ground survey	2002

Element Occurrence Report

EO ID 16347 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19262

Surveyor

Surveyor

L.L. Gaddy
Harry LeGrand, NCNHP
James Padgett, ASU
Emily Gillespie, ASU
Gill Newberry

Survey Date 2002-04-18

Last Observation Date 2002-04-18 **First Observation Date** 1981-05

EO Data 2002: Padgett visited in April 2002. Plants were seen on both sides of SR 1910 estimated between 100-200 (Padgett 2002).
1995: Total of about 350 plants observed by Newberry in 1995: 150-200 plants at Bluff site (west of road) and 100-150 plants at Creekhead site (east of road) (Newberry 1996).
1989: Both sides of road posted, habitat intact, plants seen on west side of road along edge of wood margin, 6 May 1989 (LeGrand 1989).
1981: Total of 300-400 plants at both sites observed by Gaddy in May 1981: Bluff site (west side of SR-1910) had about 100 plants in 0.5 acre, and creekhead site (east side of SR-1910) had 200-300 plants in 1 acre (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Area is being developed. New houses adn forest clearing are reducing size of populations (Newberry 1996). Both sides of road posted, habitat intact, plants seen on west side of road along edge of wood margin, 6 May 1989 (LeGrand 1989).

Condition Rating

Size of EO About 100 plants in 0.5 acre, and creekhead site (east side of SR-1910) had 200-300 plants in 1 acre (Gaddy 1981).

Landscape Context SNHA

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2002-04-18

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Site A: Creekhead (to east of road) is mesic, well-drained with middle-aged to mature canopy. Bluff (west of road) is mesic to xeric, well-drained. site B (EO 180): Bluff, with mature canopy of Quercus alba, Pinus strobus, Fagus; understory of Acer rubrum; shrub layer of Kalmia and Rhododendron maximum.

Min. Elevation	1,130.00	**feet**	344.00	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	1.50	**acres**	0.61	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Element Occurrence Report

EO ID 16347 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19262

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments Posted Sept. 5, 1988. Pansy Taylor, Lee Swink, Route 1, Box 181, Connelly Springs, NC.
OwnerInfo_BCD N

Additional Topics

General Comments Site B has been split out as a separate sub EO (see EO 180) for better data organization; principal EO 101 represents both sub EO 005 and sub EO 180, in addition to sub EO 006 (Wichmann 2005). Subpop B was formerly EOR #007 (Russo 1995).
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G02BUR01NCUS	Oakley, S.C. 2002. An Inventory of the Significant Natural Areas of Burke County, North Carolina.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F89NHP01NCUS	NCNHP Staff, 1989 Field Survey	N

Specimen

Specimen Description
HERB.BOON 16380, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002
HERB.BOON 16399, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002
HERB.BOON 16377, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 10/14/2015 12:00:00AM
Transcribed By ASW **Transcription Date** 1/18/1989 12:00:00AM
Manual File Note

Mapping

Paper Mapping By MJR **Paper Mapping Date** 11/2/1995 12:00:00AM
Digital Mapping By SCM **Digital Mapping Date** 4/28/2009 12:40:34PM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Element Occurrence Report

EO ID 16347 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 19262

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	328
SITE	328.000000 - S.USNCHP*142
WATERSHED	191 - 03050102
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	
ACREAGE	2.109852
HECTARES	0.85383
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_ZONE	
LATITUDE_DD	
UTM_NORTHING	
LONGITUDE_DMS	
MAPSHEET	39389 - 35081-E5
HUC_12	030501020201
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User	ASW	**Record Create Date**	1/18/1989 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/14/2015 11:09:59PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 15583 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 18498

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 17 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20290 **Parent EO Shape ID** 48,332.00 **Parent EO Number** 97

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: Sandy Run Creek, N of SR 1003 (Sub EO of EO 097).

Directions

Broad River: Sandy Run Creek, north of SR 1003. This is a Sub EO of Parent EO 097 (Wichmann 2005). Beside Sandy Run Creek, about 1 mile west of Boiling Springs (and SR 1158) and about 0.4 mile due north of SR 1003. On remnant bluff on south side of creek, beside transmission line corridor (Murrell & Kelly 1993).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North	1		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 15583 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 18498

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Remapped to cut out areas around a house that has been built since the EO was originally mapped (Padgett 2014).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49055	2014; Padgett	Sandy Run Creek #	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1993, 2002

Surveyor

Survevor
Zack Murrell
A.W. Kelly
Gill Newberry

Element Occurrence Report

EO ID 15583 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 18498

Survey Date 1995-1996
Last Observation Date 1995-1996 **First Observation Date** 1993-04-04
EO Data 1996: 50 plants observed by Newberry in 1995/1996 [year not reported] (Newberry 1996).
1993: 50 or fewer clumps seen in an area of about 10x20 meters by Murrell and Kelly on 04 April 1993, on a steep, north-facing remnant bluff (Murrell & Kelly 1993).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 1995-1996
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Subpop 1: remnant bluff, with transmission line clearing at the top and high, steep creek bank at the bottom. Plant community is Mesic Mixed Hardwood Forest or Piedmont/Coastal Plain Heath Bluff. other species include Kalmia latifolia, Quercus sp., Carpinus, Halesia carolina, Amelanchier arborea, Xanthorhiza simplissima, Oxydendrum, Cornus florida, PInus virginicus, Heuchera americana, Carya cordiformis, Hepatica americana, ilex opaca, Epigaea repens, Polystichum, Mitchella repens, Leucothoe axillaris, anisostichus capreolata, Gelsemium sempervirens, Smilax glauca, Thalictrum thalictroides (Murrell & Kelly 1993).

Min. Elevation	700.00	**feet**	213.00	**meters**
Max. Elevation	720.00	**feet**	219.00	**meters**
Observed Area	2.50	**acres**	1.01	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Besides the powerline clearing at the top, extending across the creek from site is a wire, as though for sliding and jumping into the creek (Murrell and Kelly).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments It is unknown whether the powerline clearing allows a damaging amount of sunlight to reach the Hexastylis (Murrell and Kelly 1997).

Ownership

Owner Type	Owner Name	Owner Note
Unknown	R. BEASON; OTHER PRIVATE	

Owner Comments
OwnerInfo_BCD N

Element Occurrence Report

EO ID 15583 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 18498

Additional Topics

General Comments Jim Matthews (UNCC) gave a verbal report that this species had been found in this vicinity by Tom Jones (Gardner-Webb). It is not clear whether this E.O. is the same site as the one Jones observed. Notes on the verbal report are included with this E.O. in the manual file.

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries Y - Yes **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F93CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/8/2015 12:00:00AM

Transcribed By JTF **Transcription Date** 2/4/2003 12:00:00AM

Manual File Note

Mapping

Paper Mapping By AWK **Paper Mapping Date** 5/5/1993 12:00:00AM

Digital Mapping By JEP **Digital Mapping Date** 9/26/2014 3:11:49PM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 15583 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 18498

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.79955726065
Hectares	0.728256110013
WATERSHED	194 - 03050105
MAPSHEET	40120 - 35081-C6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	AWK	**Record Create Date**	5/5/1993 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	11/18/2015 11:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 14983 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17898

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 32 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork tributary south of Longview
NCDOT TIP: R-2824
NCDOT TIP: U-2528AA I-40/SR 1124 Interchange

Directions

South Fork Catawba River: Henry Fork tributary south of Longview. SOUTH OF LONGVIEW ALONG A TRIBUTARY TO HENRY FORK AT PROPOSED INTERCHANGE AT INTERSTATE-40 AND SR 1124 (33rd Street).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F4	Longview	14		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 14983 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17898

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Additional inventory needed to confirm the 250 plants thought to be preserved in ROW purchased at this site by NCDOT; GPS/GIS data clearly mapping the occurrence and ROW would be beneficial (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
14982	1995-03-21; Savidg	Henry Fork tributar	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996, 2005

Surveyor

Surveyor
Tim Savidge, NC DOT
HDR personnel
HARP personnel
Pete Stafford, RK&K
Hal Bain, RK&K

Element Occurrence Report

EO ID 14983 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17898

Survey Date 2013-06-06

Last Observation Date 2013-06-06 **First Observation Date** 1995-03-21

EO Data 2013: 234 plants counted in 2.3 acres on 6 June 2013 (Stafford for NCDOT 2013).
2011: 60 observed by NCDOT on 03 March 2011 in their ROW; the remainder of the occurrence [number of plants not reported] was noted to be outside of the ROW (NCDOT 2014).
2007: 42 plants observed by NCDOT on 22 March 2007 in the right-of-way. Overpass construction removed some trees, altering the habitat (NCDOT 2009).
2005: More than 1,000 plants are within construction project area (DOT TIP: U-2528AA); 619 plants are expected to be impacted by construction activites in 2005. However, 250 plants were reported to be protected on-site, but only 1 plant was found during 2005. Verification of the situation is needed, including the number of plants protected on-site (Wells 2006). 1 plant found during field checks, 250 plant are thought to be preserved in additonal ROW purchased at this site (HDR personnel 2005).
2003: Impacted by NCDOT project U-23907C and/or private landowner, portion of EO still present, portion of EO are gone (Bassette 2003).
1995: Over 1000 plants observed by Savidge on 21 March 1995 (SAVIDGE 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 60 plants (2011). 42 plants (2008). 1 plant found, possible more (HDR personnel 2005).

Landscape Context near I-40 interchange

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2011-03-03

EO Rank Comments EO rank is based on EO Rank Specs for this species; downgraded from an AB to a D based on EO data from Spring 2005 (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Medium quality Dry-Mesic Oak-Hickory Forest with a canopy dominated by Pinus taeda, Quercus alba, Q. rubra, Carya glabra, Acer rubrum, Liriodendron tulipifera, and Fagus grandifolia. The understory consists of Juniperus virginiana, Pinus taeda, Carpinus caroliniana, Oxydendron arboreus, Acer rubrum, Cornus florida, Ilex opaca. The shrub layer includes Rhododendron sp., and Rubus sp. Woody vines include Vitis rotundifolia, Smilax sp., and Toxicodendron radicans. The herb layer is sparse to moderately dense and includes Hexastylis naniflora, Goodyera pubescens, and Tipularia discolor. (Stafford for NCDOT 2013). NC DOT right-of-way (HDR personnel 2005). NORTH-FACING SLOPE GRADING TO SMALL STREAM (SAVIDGE 1996).

Min. Elevation	1,090.00	**feet**	332.23	**meters**
Max. Elevation	1,100.00	**feet**	335.28	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Element Occurrence Report

EO ID 14983 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17898

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	NCDOT	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Invasive species present include Lonicera japonica, Ligustrum sinense, Albizia julibrissin. (Stafford 2013).

Additonal Topics This project was subject to consultation with USFWS (ASNC log no. 4-2-95-102), and a Biological Opinion was written in 1995 for impacts relating to NCDOT's road work. The ammended BO anticipated direct impacts to 619 plants, but the Service anticipated that the site would ultimately be lost through indirect impacts. Murray's Mill was purchased as off-site mitigation. [C.Wells, 8/2006]. "U-2528AA (EO 32) involves a new highway interchange where impacts to approximately 619 plants were anticipated. A portion of the mitigation was provided for this site through the Murray's Mill purchase and conservation of 25 acres of a H. naniflora population. During the recent field visit, it was discovered that much of the surrounding habitat had been disturbed through logging operations and/or project impacts. While only one plant was found during field checks, 250 plants are thought to be preserved in additional ROW purchased at this site" (HDR personnel 2005). "U-252AA...Construction completed June 2003...may have affected all or portions of [EO] 032...Results of the October 2001 survey indicate that the only DFHL impacts on this project occurred as a result of direct construction activities...indirect impacts were not observed, it is anticipated that such impacts could eventually occur from development along the interchange. Based on October 24, 2002 conversation with Trish Simon, the plants in Quad D (SE quadrant) are still present and a protective fence has been placed around them. NCDOT did not disturb Quad A (NE quadrant) according to road project's permits and plans, but the property owner has since cleared the area for future development. The plants in Quadrant A (NE quad) are now gone. Quad B (NW quadrant) was already stressed before construction was started due to logging and these plants are gone. The population on other side of the original on-ramp had been cleared by the landowner for future development" (Bassette 2003).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N

Element Occurrence Report

EO ID 14983 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17898

Specimen

Specimen Description

HERB.USC SAVIDGE S.N. 21 MARCH 1995

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/26/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	9/12/1997 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	3/1/1997 12:00:00AM
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39023 - 35081-F4
WATERSHED	191 - 03050102
ACREAGE	7.71
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
HUC_12	030501020103
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	JLA	**Record Create Date**	9/12/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	6/27/2016 6:14:29PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 14835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17750

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 48 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Lippard Creek tributary

Directions

Catawba River: Dutchmans Creek-Leepers Creek, Lippard Creek, tributary approximately 5.5 miles southeast of Maiden: on the southwest side of an unnamed tributary to Lippards Creek 0.5 mile east of SR 1003 (Buffalo Shoals Road) and 0.6 mile north of SR 1343.

Locators

Latitude **Longitude**

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E2	Maiden	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 14835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17750

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

"...population probably extends along streambank" (Cantrell 2999).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
14834	1999; Cantrell	Catawba River: Lip	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1999

Surveyor

Surveyor
Mark Cantrell, USFWS

Survey Date 1999-05-17

Last Observation Date 1999-05-17 **First Observation Date** 1999-05-17

EO Data More than 40 clumps in leaf and flower on 17 May 1999; density of plants at about 1 plant per 3-5 square meters (Cantrell 1999).

Element Occurrence Report

EO ID 14835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17750

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO More than 40 clumps (Cantrell 1999).
Landscape Context Piedmont Mixed Mesic Forest (Cantrell 1999).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 1999-05-17
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Piedmont Mixed Mesic Forest on moist, lower slope of stream with northeast aspect (Cantrell 1999).

Min. Elevation		**feet**		**meters**
Max. Elevation	920.00	**feet**	280.00	**meters**
Observed Area	0.50	**acres**	0.20	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Owner plans a trailer park on portions of the 40 acre tract (1999).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments GARY MILLER, DEVELOPER
OwnerInfo_BCD Y

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary
F99CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Element Occurrence Report

EO ID 14835 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17750

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	8/11/2000 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	8/11/2000 12:00:00AM
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39392 - 35081-E2
WATERSHED	190 - 03050101
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
ACREAGE	7.71
HUC_12	030501011301
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	JLA	**Record Create Date**	8/11/2000 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	10/21/2015 3:13:46PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 14504 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17419

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 29 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
549	Island Creek Heath Bluff	N

Survey Site

Survey Site Name

Catawba River: Island Creek Heath Bluff, Lovelady 3-8

NCDOT TIP: R-2824

USFWS Flex Fund Monitoring Site 10

Directions

Catawba River: Island Creek, Island Creek Heath Bluff, NC DOT Lovelady sites 3-8. About 2 miles north of Connelly Springs, between Tomlinson Loop (SR 1613) and SR 1001, along route of proposed Lovelady Road (SR 1546) extension.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G5	Drexel	1		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 14504 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17419

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS shapefiles from HDR were used to digitize the EO rep associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Principal EO 178 is approximately 1.5 air kilometers from principal EO 029, however the occurrences are separated by unsuitable habitat (ridge and town) greater than 1 kilometer wide and are therefore considered independent principal EOs (Wichmann and Franklin 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

NC DOT personnel have conducted detailed surveys (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68187	Padget 2012	north of Island Cree	Polygon	Delimited				GPS, 10-meter acc
68507	Padget 2012	Island Creek Heath	Polygon	Delimited				2010 aerial photos
68188	Padgett EO 29 plot	north of Island Cree	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996,2002,2005
Quantitative ground survey	2012, 2013, 2014

Element Occurrence Report

EO ID 14504 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17419

Surveyor

Surveyor

Misty Franklin, NCNHP
William S. Moye
Savidge, NC DOT
James Padgett, ASU
HDR personnel
HARP personnel
James Padgett, NHP, 2013
Jim Matthews, HARP
Sean Bloom, CLC

Survey Date 2016-05-24

Last Observation Date 2016-05-24 **First Observation Date** 1995-03-21

EO Data 2016: Bloom counted 1472 plants in 1.79 acres of monitoring plots on 24 May 2016, and estimated 50,000+ plants occuring in the entire 62 acres of mapped area (Bloom 2016).
2014: Padgett counted 1718 plants within monitoring plots on 25 June 2014 and estimated 58,000+ plants covering 65 acres of mapped area (Padgett 2014).
2013: Padgett and Israel counted 1715 within monitoring plots on 18 July 2013 and estimated 17,000+ plants covering 18-acre population area, and 61,000+ plants for 65-acre mapped area (Padgett 2013).
2012: 1015 plants counted in 1.8-acre sample plot in 2012. Estimate of 10,150 plants for 18-acre population area. (Padgett 2012).
2006: Population apparently doing very well (plants not counted) on 28 April 2006, observed by Franklin and Moye (Franklin 2006).
2005: An approximate total of 98,789 individuals were calculated, at 6 sub-populations, using 1/100 acre sampling plots. Plants at site 8 were directly counted. Surveys made in October and November 2004; confirmation of species made in April 2005 by Matthews (HDR 2005, Bassette 2009) [this is likely an over-estimate resulting from a calculation of density per acre (Wichmann and Padgett 2005)].
2002: 800-1200 plants in flower on 5-8-2002 (Padgett 2002).
1995: More than 1000 plants counted on lower to upper slopes in an area 1-2 miles long (Savidge 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Estimated over 50,000 plants (2016). Estimated over 58,000 plants (2014). Estimated over 61,000 plants (2013). Over 98,000 individuals estimated (HDR 2005).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2016-05-24

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

Element Occurrence Report

EO ID 14504 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17419

General Description Population intermixed with Hexastylis heterophylla (Franklin 2006). Mixed pine and hardwood forest, associated species include: American beech, sourwood, umbrella magnolia, American holly, white pine, white oak, Christmas fern, grape, honeysuckle, cranefly orchid, smilax, mountain laurel, hemlock (Tsuga canadensis), partridge berry, galax, yellow poplar, red maple, dogwood, black oak, black cherry, mockernut hickory, strawberry bush, rattlesnake plantain (Goodyera repens), scarlet oak (Q. coccinea), persimmon (Diospyros virginiana), northern red oak, sassafras, mountain silverbell (Halesia carolina), chestnut oak, Virginia pine, black gum (Nyssa sylvatica), red cedar, and shortleaf pine, rhododendron, fringe tree (Chionanthus virginicus), strawberry bush, horse sugar (Symplocos tinctoria), and buffalo nut (Pyrularia pubera), ground pine (Lycopodium obscurum), running-pine, skullcap (Scutellaria spp.), broomsedge (Andropogon virginicus), devil's bit, and trailing arbutus (Epigaea repens) (HDR 2005). --Forest and large cutover areas with Kalmia latifolia, Galax aphylla, Chimaphila maculata, Quercus alba, Pinus strobus, Oxydendron arboreum.

Min. Elevation	1,040.00	**feet**	317.00	**meters**
Max. Elevation	1,200.00	**feet**	365.76	**meters**
Observed Area	49.00	**acres**	19.83	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Alan and Janice Jacks, Rutherford College/Caldwell County	2012 and 2016 granted permission to survey

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Identification confirmed by Gillian Newberry (USC-Spartanburg)

Additonal Topics EO associated with NC DOT project R-2824, impacts by NCDOT listed as N/A, see U05HDR01NCUS (Wichmann 2005).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 14504 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17419

References

Reference Code	Full Citation	EO Reference Primary
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F06FRA01NCUS	Franklin, M. A. 2006. Field notebook for site visits conducted during 2006.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	7/26/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	4/11/1997 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	4/11/1997 12:00:00AM
Digital Mapping By	KAI	**Digital Mapping Date**	6/11/2013 3:17:35PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 14504 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17419

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	190 - 03050101
LONGITUDE_DMS	[redacted]
UTM_EASTING	
LATITUDE_DMS	
LONGITUDE_DD	
LATITUDE_DD	
UTM_ZONE	
HECTARES	24.995431
UTM_NORTHING	[redacted]
ACREAGE	61.76481
HUC_12	030501010802
MAPSHEET	38656 - 35081-G5
COUNTY	1828 - NCBURK
Site_Code	549
SITE	549.000000 - S.USNCHP*2087

Record Maintenance

Record Create User	JLA	**Record Create Date**	4/11/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:13:44PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 14501 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17416

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 30 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21677 **Parent EO Shape ID** 58,702.00 **Parent EO Number** 179

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (Sub of 179).
NCDOT TIP: U-2414A Tate Blvd SE
NCDOT TIP: R-2824

Directions

South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital. Unnamed tributary to Miller Branch, near SR 1572 & 1476. This is a sub EO of Parent EO 179 (Wichmann 2003). 0.4 km west of intersection of Tate Boulevard (SR 1692) and Fairgrove Church Road (SR 1476) on north and south sides of Tate Boulevard.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory	5		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 14501 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17416

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Polygon created from GIS data received from Padgett in 2005 (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

"[NC DOT]project construction is ongoing and records for this population are insufficient for field verification at this time...it is recommended that a follow-up survey is conducted at the project location to determine actual impacts after construction is completed" (HDR personnel, 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28170	2002; Padgett	South Fork Catawba	Polygon	Delimited				1:24,000 topos (di
29587	1995; NCDOT	South Fork Catawba	Point	Estimated	50.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996, 2001

Element Occurrence Report

EO ID 14501 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17416

Surveyor

Surveyor

Tim Savidge, NC DOT
Hal Bain
James Padgett, ASU
Emily Gillespie, ASU
Pete Stafford, RK&K Consulting Engineers
Cheryl Gregory, NCDOT

Survey Date 2013-06-05

Last Observation Date 2013-06-05 **First Observation Date** 1995-03-22

EO Data 2013: 4719 plants counted in 6.6 acres on 5 June 2013 (Stafford 2013).
2011: A total of 5032 plants were counted over 6.6 acres on 3 November and 12-13 December 2011; 3425 in 4.24 acres north of Tate Blvd and 1607 in 2.36 acres south of Tate Blvd (Gregory 2011)
2001: Field review by NCDOT on October 2001: population along the south side of Tate Boulevard intact and may have slightly expanded outside of the originally delineated boundaries, populations along the north side of Tate Boulevard appeared to have been slightly impacted along the parking lot of a newly constructed building. Few DFHL [Hexastylis naniflora] existed along the north side of Tate Boulevard before the building was constructed (Bassette 2003).
1996: Between 50 and 500 plants present. Identification verified by G. Newberry (Savidge & Bain 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO

Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-10

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description High quality Dry-Mesic Oak-Hickory Forest occurring both north and south of Tate Boulevard. The canopy is dominated by Quercus alba, Q. rubra, Carya glabra, Acer ruburm, Liriodendron tulipifera, and Fagus grandifolia. The understory consists of Carpinus caroliniana, Oxydendron arboreum, Acer rubrum, Cornus florida, Ilex opaca. The shrub layer includes Rhododendron sp., Rubus sp., and Euonymus americanus. Woody vines inlcude Vitis rotundifolia, Smilax sp., and Toxicodendron radicans. The herb layer is sparse to modeately dense and includes Hexastylis naniflora, Goodyera pubescens, Polystichum acrostichoides, and Mitchella repens. (Stafford 2013).
North facing slope, plants located about mid-slope grading to small creek draining to Miller Branch. Associated species inlcude Kalmia latifolia, Goodyera pubescens, Chimaphila maculata, Quercus alba, and Pinus strobus.

Min. Elevation	940.00	**feet**	287.00	**meters**
Max. Elevation	1,000.00	**feet**	305.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

Element Occurrence Report

EO ID 14501 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17416

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments In NCDOT ROW?

OwnerInfo_BCD N

Additional Topics

General Comments The following invasive species were noted as low threast: Lonicera japonica, Ligustrum sinense, and Albizia julibrissin. Hedera helix was noted as a moderate threat. (Stafford 2013)

Additonal Topics NCDOT implemented avoidance/minimization for U-2414A and reduced the road from four-lane divided to five lanes, which resulted in the construction limits remaining outside of the forested areas where H. naniflora was known to exist (NCDOT 2014).
"U-2307 (EO 179 [sub EO 30]) was expected to have significant impacts on a large population of H. naniflora in Catawba County. It was expected that a population of 10,700 plants would be lessened by 5,400 as a direct result of the realignment of multi-lane road. Project construction is ongoing and records for this population are insufficient for field verification at this time. While this population loss was mitigated by the purchase of 25 acres at Murray's Mill, it is recommended that a follow-up survey is conducted at the project location to determine actual impacts after construction is completed" (HDR personnel, 2005).
"U-2414A .. may affect all or portions of...[EO 030]...Results of the NCDOT's October 2001 field review revealed that the DFHL [Hexastylis naniflora] population along the south side of Tate Boulevard is intact and may have slightly expanded outside of the originally delineated boundaries. However, DFHL [Hexastylis naniflora] populations along the north side of Tate Boulevard appeared to have been slightly impacted along the parking lot of a newly constructed Home Builders Association building. Note that few DFHL [Hexastylis naniflora] existed along the north side of Tate Boulevard before the building was constructed" (Bassette 2003).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F13DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2013.	N

Element Occurrence Report

EO ID 14501 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17416

Specimen

Specimen Description

HERB.USC T. SAVIDGE S.N. 22 MARCH 1995

HERB.BOON 16379, J E PADGETT AND EMILY GILLESPIE APRIL 18, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	6/27/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	9/12/1997 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	3/1/1997 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/25/2015 10:49:01AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
HUC_12	030501020302
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	3.68997512861
Hectares	1.49328226001
WATERSHED	191 - 03050102
MAPSHEET	39024 - 35081-F3
COUNTY	1834 - NCCATA
PARENT_EO_ID	21457

Record Maintenance

Record Create User	JLA	**Record Create Date**	9/12/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	6/27/2016 6:15:15PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 14124 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17039

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 75 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
1879	Brice Rare Plant Site	N

Survey Site

Survey Site Name
Horsehead Coorporation (Sub EO of EO 99)
Broad River: Brice Rare Plant Site (Sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Monitoring data below is a subset of monitoring data for Parent EO 99 (Padgett 2013). Site visited and the plants counted in the three permeant monitoring plots by Padgett and Israel on 17 July 2013. Total number of plants counted was 1748 (Padgett 2013)Site renamed and three permanent plots installed and the plant counted. A total of 759 plants were counted in the three monitoring plots on 2012-09-06 (Padgett 2013). Broad River: Brice Rare Plant Site. This is a sub EO of Principal EO 099. This sub EO is comprised of 3 sub-occurrences located along the 3 unnamed tributaries contained within the Brice Rare Plant Site: Sub-EO (A) Western-most tributary; Sub-EO (B) Middle tributary; Sub-EO (C) Eastern-most tributary. See map for details (Wichmann 2005). Approx. 3.5 miles south-southeast of Harris, NC along the southern part of Rutherford County just across the Broad River. Site is bisected by CSX railroad. (Padgett 2003).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee	5		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 14124 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17039

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub-EOs area located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68509	Padgett 2012	Brice Rare Plant Sit	Polygon	Delimited				2010 aerial photos
88451	Padgett EO 75 plot	Brice Rare Plant Sit	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003, 2004

Element Occurrence Report

EO ID 14124 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17039

Surveyor

Surveyor

James Padgett, ASU (2003); NHP (2004)

Survey Date 2013-07-17

Last Observation Date 2013-07-17 **First Observation Date** 2003-03-14

EO Data 2013: 748 plants counted in permanent monitoring plots by James Padgett on 17 July 2013, for an estimate of 7000+ plants for the whole EO (Padgett 2013).
2004: Site unchanged since visit the previous year (Padgett 2004).
2003: Estimated 700 to 1000 single leaves and clumps in 3 subpopulations along streams. In leaf, bud and flower on 14 March (Padgett 2003).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Site unchanged since visit the previous year (Padgett 2004). 700 to 1000 single leaves and clumps in 3 subpopulations along streams. In leaf, bud and flower on 14 March (Padgett 2003).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2013-07-17

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Dry-Mesic Oak--Hickory Forest with a canopy dominated by Quercus alba, Quercus montana, Quercus coccinea, Quercus rubra, Liriodendron tulipifera, and Acer rubrum. Kalmia is thick along the slopes in some locations. Other associated species include Chimaphilia maculata, Polystichim acrostichoides, and Goodyera pubescens (Padgett 2004).

Min. Elevation	600.00	**feet**	182.88	**meters**
Max. Elevation	880.00	**feet**	268.22	**meters**
Observed Area	40.00	**acres**	16.19	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Horsehead Metal Products: contact James Harris, jharris@hor	2012, 2015, & 2016, responded with permission to survey

Element Occurrence Report

EO ID 14124 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17039

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
F13NHP01NCUS	NCNHP Staff, 2013 Field Survey	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
F03CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen
Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 3/17/2016 12:00:00AM
Transcribed By JLA **Transcription Date** 3/27/2003 12:00:00AM
Manual File Note

Mapping

Paper Mapping By JLA **Paper Mapping Date** 3/27/2003 12:00:00AM
Digital Mapping By JLA **Digital Mapping Date** 9/8/2015 10:01:23AM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 14124 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 17039

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	1879.000000 - S.USNCHP*2302
SITE	2493.000000 - S.USNCHP*4588
Site_Code	1879
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	7.79622560113
Hectares	3.15502543499
WATERSHED	194 - 03050105
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	JLA	**Record Create Date**	3/26/2003 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	3/22/2016 6:12:34PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 14047 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16962

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 15 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2546	Mount Zion Heartleaf Forest	N

Survey Site

Survey Site Name

South Fork Catawba River: Indian Creek, Mill Creek, unnamed tributary at US 274

Mount Zion Heartleaf Forest

Directions

Mount zion Heartleaf Site is located between Highway 274 and SR 1158 (Mount Zion Church Rd.) at the Gaston/Lincoln County line, in the southwest corner of Lincoln County. South Fork Catawba River: Indian Creek, Mill Creek, unnamed tributary at US 274: Three miles northwest of Cherryville, just inside Lincoln County, along US Highway 274 (Padgett 2005). "MOIST DECIDUOUS WOODS ON US 274, 3 MILES WEST OF CHERRYVILLE" (ROBINSON 1970).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D4	Cherryville			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 14047 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16962

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
34655	1970; Robinson	Mount Zion Heartle	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1970,2000, 2001

Surveyor

Survevor
L.R. Gaffney, HARP
J.T. Soule, HARP
James Padgett, ASU
Gill Newberry

Element Occurrence Report

EO ID 14047 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16962

Survey Date 2000-03-31
Last Observation Date 2000-03-31 **First Observation Date** 1970
EO Data Present on 31 March 2000 (Matthews et al 2002). "No signs of plant when surveying area in 1995" (Newberry 1996). Discovered by Robinson in 1970.

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**

EO Rank Date 2000-03-31
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak--Hickory Forest (Matthews et 2002).
Min. Elevation 860.00 **feet** 262.13 **meters**
Max. Elevation 900.00 **feet** 274.32 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** N - No **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Eaker	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments J. Padgett (2004) surveyed a nearby site and failed to find the species. This EO was previously ranked as X? based on his negative survey.

Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 14047 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16962

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	Y
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description
HERB.ASU 5121, JOHN ROBINSON 177, 26 APRIL 1970.
HERB.UNCC J.T. Soule & L.R. Gaffney s n. 31 March 2000.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Mason **Version Date** 4/27/2009 12:00:00AM
Transcribed By **Transcription Date** 1/1/1982 12:00:00AM
Manual File Note

Mapping

Paper Mapping By - **Paper Mapping Date** 1/1/1982 12:00:00AM
Digital Mapping By JLA **Digital Mapping Date** 12/6/2006 8:10:05PM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020502
HECTARES	10.02539
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
ACREAGE	24.773179
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39754 - 35081-D4
WATERSHED	191 - 03050102
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 14047 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16962

Record Create User	ASW	**Record Create Date**	9/2/1991 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	12/4/2015 5:16:20PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 13728 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16643

Summary

Classification Code

Subnational Scientific Name	*Hexastylis naniflora*	**Nation**	US	**Global Rank**	G3
Subnational Common Name	Dwarf-flowered Heartleaf	**Subnation**	NC	**Subnational Rank**	S3

Identifiers

ELCODE_BCD	PDARI03060	**EO Number**	34	**Field Office Number**	
ID Confirmed	Y - Yes				

Element

Element Subnational ID	15335	**Protection Status**	T	**Data Sensitive Element**	

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	20286	**Parent EO Shape ID**	48,311.00	**Parent EO Number**	93

Site/Directions

Sites

Site ID	Name	Auto-calculated
1385	West Shelby Mesic Slope	N

Survey Site

Survey Site Name

First Broad River: West Shelby Mesic Slope (This is a sub EO of EO 093).

Directions

First Broad River: West Shelby Mesic Slope: This is a sub EO of parent EO 093 (Wichmann 2005). East of the First Broad River at the end of Lackey Street in Shelby and 0.3 mile west of Westview Church (Oakley 2002).

Locators

Latitude	[redacted]	**Longitude**	[redacted]
South	**North**	**East**	**West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 13728 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16643

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49896	2005-05-19; Frankl	West Shelby Mesic	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1997, 2002, 2005

Element Occurrence Report

EO ID 13728 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16643

Surveyor

Surveyor

Huysmans
Newberry
Oakley
Misty Franklin, NHP
Brenda Wichmann, NHP
James Padgett, NHP

Survey Date 2005-05-19

Last Observation Date 2005-05-19 **First Observation Date** 1997-06-04

EO Data Approximately 60 clumps counted, probably more; less than 50% flowering. Plants are scattered throughout SNHA on north-facing slope (Franklin et al. 2005). Only 50 plants or so seen on 30 July in leaf in partial survey of areas within 0.35 mile of Westview Church (Oakley 2002). Vigorous population consisting of many large clumps at the base of trees and younger plants on the slope face 4 June (Newberry & Huysmasn 1997).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO less than 50% flowering (Franklin et al. 2005).

Condition Rating

Size of EO Approximately 60 (Franklin et al. 2005).50 plants or so (Oakley 2002). Vigorous population (Newberry & Huysmasn 1997).

Landscape Context Mature wooded north-facing slope, with more disturbed forests to the east, in a rapidly urbanizing area (Oakley 2002).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-19

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic, northeast-facing slope, steep enough to remove leaf litter with rainfall; Closed canopy of Fagus grandiflora and Quercus alba; generally open understory of Cornus florida, Oxydendrum arboreum, and Ilex opaca; shrub layer of Hamamelis virginiana, Rhododendron sp. (deciduous), Calycanthus floridus, Ilex sp. (deciduous), Acer negundo, and Euonymus americanus; herbaceuous layer of Vaccinium pallidum, Carex ssp., Tiarella cordifolia, Maianthemum racemosum, Polystichum acrostichoides, Luzula af. acuminata, and Cimicifuga americana (Franklin et al. 2005). Mature wooded north-facing slope, with more disturbed forests to the east, in a rapidly urbanizing area (Oakley 2002).

Min. Elevation	720.00	**feet**	219.00	**meters**
Max. Elevation	760.00	**feet**	232.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments G. Newberry recommends an environmental easement here to serve as mitigation for impacts at EOR#036 (1997).

Element Occurrence Report

EO ID 13728 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16643

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	David and Don Brown	

Owner Comments David Brown is the Forester at Dupont State Forest (Franklin et al. 2005).

OwnerInfo_BCD N

Additional Topics

General Comments Plants are on south side of an intermittent tributary of the broad river, areas on north side of the tributary recently cleared for development (Oakley 2002).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 9/10/2015 12:00:00AM

Transcribed By JLA **Transcription Date** 9/11/1997 12:00:00AM

Manual File Note

Mapping

Paper Mapping By JLA **Paper Mapping Date** 9/11/1997 12:00:00AM

Digital Mapping By MFB **Digital Mapping Date** 6/18/2009 8:13:59AM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 13728 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16643

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
WATERSHED	194 - 03050105
ACREAGE	0.86599
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	0.350455
MAPSHEET	40121 - 35081-C5
HUC_12	030501050703

Record Maintenance

Record Create User	JLA	**Record Create Date**	9/11/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:09:08PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 13542 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16457

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 20 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22468 **Parent EO Shape ID** 63,724.00 **Parent EO Number** 252

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork, Large unnamed tributary and US 321 (Sub of 252)
NCDOT TIP: R-2824
NCDOT TIP: R-0085 US 321 Bypass site id # 4

Directions

South Fork Catawba River: Henry Fork, 0.3 miles east of Zion Church; just west of US-321Bypass. This is a Sub EO of Parent EO 252 (Wichmann 2005). Subpopulation A (Site 4): located southwest of Propst Drive (no SR #) and just west of US 321 bypass; Subpopulation B (Site 5): extirpated (Wichmann 2005). 2 subpopulations [subpopulation A/site 4 and subpopulation B/site 5 (Wichmann 2005)] Along unnamed tributary to Henry Fork, northeast of SR 1008 and southeast of SR 1920 (Corda 1993).

Locators

Latitude Not processed per agreem **Longitude** Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 13542 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16457

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Extent of population was delimited in the field with GPS (Franklin and Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Within 2.0 kilometers of sub EO 019; EOs 019 and 20 were not separated by an area of persistently unsuitable habitat at the time of discovery and are therefore linked by Parent EO 252 (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28250	2007; NCDOT	Site 4, South Fork C	Polygon	Delimited				1998 aerial photos
49046	1996; Newberry	Site 5, Henry Fork	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1993, 2005

Element Occurrence Report

EO ID 13542 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16457

Surveyor

Surveyor

Corda, NC DOT
HDR personnel
HARP personnel
Franklin
Padgett
Wichmann
Gill Newberry

Survey Date 2007

Last Observation Date 2007 **First Observation Date** 1993-08-06

EO Data 2007: 296 clusters observed at Site 4 by NCDOT in 2007 (NCDOT 2009).
2005: Estimate approximately 250 plants, 150 counted on 12 May 2005 (Franklin et al. 2005). Only one subpopulation (subpopulation A/site 4) remaining after construction of US 321 Bypass (Wichmann 2005).
2005: Approximately 20,000 plants in 3 separate areas [includes sub EO 019 (Wichmann 2005)]; heathly population prior to construction of US 321 Bypass south of Hickory, during field-checking, it was discovered that this site may have been significantly impacted (HDR personnel, 2005).
1995/1996: Newberry reported the following conditons in 1995/1996: Site 4-- Building of the road destroyed about 100 plants of the original 200; 133 plants from site 3 planted here so total number of plants present is about 200; Site 5-- destroyed by construction of the road (Newberry 1996). A total of 14,443 plants, scattered between EOs 19 and 20, were located in the construction project area (NCDOT 321) in 1995; more than 3,235 were expected to be impacted by improvement activities. Verification of the current situation is needed, including the number of plants protected on-site (Wells 2006).
1993: Subpop A (site 4): "approximately 500 plants"; Subpop B (site 5): "12 plants" (Currie 1993). Subpop A [site 4]=about 500-1000 plants (average 12 plants/100 sqm) over 0.5 acre; Subpop B [site 5] =12 plants over 10-100 sqm; in leaf & flower (Corda 1993).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments This site will be monitored in 2015 by a NCDOT contractor to fullfill the 5-year monitoring requirement (NCDOT 2014).

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 296 clusters (2007).

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-12

EO Rank Comments EO rank is based on EO rank specs for this species (WIchmann 2005).

EO Rank Specifications Version Used

Description

EO Type

Element Occurrence Report

EO ID 13542 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16457

General Description Fairly mature Dry-mesic Oak Hickory Forest dominated by Quercus alba and Oxydendron arboretum; sub-canopy dominated buy Cornus florida and Acer rubrum; understory dominated by Carya ssp., Fagus grandifolia, Vaccinium sp., and Quercus spp.; herbaceous layer dominated by Polygonatum biflorum and Rhododendron Af. pariclymenoides. Other species present include: Vaccinium pallidum, Punus serotina, Dioscorea villosa, Lespedeza sp, Quercus lyrata, Euonymus americana, Carya alba, Quercus phellos, Nyssa sylvatica, Vitis rotundifolia, Ilex opaca, Mitchella repens, Amelanchier (juveniles), Juniperus virginiana, Uvularia sessilifolia, Quercus velutina, Quercus falcata, Chionanthus virginicus, Uvularia perfoliata, Polystichum acrostichoides, Violia hastata, Thalictrum thalictroides, Aureolata laevigata, Gallium sp., Carpinus caroliniana, Scutellaria elliptica, Scuttelaria sp., Carex sp., Hustonia tenuifolia, Sanicula Af. canadensis, and Quercus stellata (Franklin et al. 2005). Subpop A(site 4): "in relatively good condition"; Subpop B (site 5): "consists of a high to-medium quality wetland area (Currie 1993).Subpop A [site 4] =adjacent to dry creek bed dominated by a mixed hardwood stand; disturbed from Hurricane Hugo blowdowns; shrub growth rank; dry, mid to lower slope, filtered light/shaded. Subpop B [site 5]=on northwest-facing slope adjacent to a floodplain.

Min. Elevation	880.00	**feet**	268.00	**meters**
Max. Elevation	900.00	**feet**	274.32	**meters**
Observed Area	1.50	**acres**	0.61	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments May have been used as a mitigation site for US-321 Bypass, flags marking plants, NCDOT needs to be contacted for details regarding this EO (Franklin and Wichmann 2005). "The Department of Transportation (DOT) will try to acquire in fee title additional righ-of-way at three of the five population sites [includes EO 020 (Wichmann 2005)] (approximately 1 acre at Site 1, 3 acres near Sites 2 and 3, and 1 acre at Site 4[EO 020]). A minimum of 1 site will be aquired within existing project right-of-way, If only one site is acquired on-site, the DOT, after consulting with the Service [FWS], will aquire at least one high quality Hexastylis naniflora site elsewhere in North Carolina (Currie 1993).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE?	

Owner Comments NCDOT is trying to purchase the property (NCDOT 2009). DOT right-of-way and/or easment site??? (Franklin and Wichmann 2005).

OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 13542 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16457

Additonal Topics

Some plants protected in conservation easments outside of construction zones at site1(EO 019 sub pop 1) and 4 (sub pop A) (Wichmann Aug. 2005, per. comm. with J. Gray NC DOT)."EO 185 (Old EO 19/20) is a large population that was surveyed prior to the construction of the US 321 Bypass south of Hickory. It was a healthy population in three separate areas that consisted of approximately 20,000 H. naniflora plants. During field-checking, it was discovered that this site may have been significantly impacted. However, much of the site is on private property and separated by a new NCDOT ROW fence which prevented access. According to old survey maps, it is possible that road construction for US 321 and private logging on some of the north-facing slopes have likely impacted the population. Because this site is such a large percentage of the known H. naniflora numbers, it is strongly recommended that NCDOT conduct a comprehensive survey to determine population viability" (HDR personnel, 2005). "Approximately 20,000 plants [including EO 019], unknown number impacted, some preserved in ROW (HDR personnel, 2005). "This project will directly impact 9.0 acres of the total 11.0 acres within the project corridor that contain Hexastylis naniflora [includes EO 019 (Wichmann 2005)]. Sites 3 [EO 019] and 5 [subpop B] will be completely eliminated. Other direct and indirect impacts from this project include disturbance from construction activities that may lead to increased erosion of downslope areas and degradation of Hexastylis naniflora habitat" (Currie 1993). Proposed construction of road project is planned over sites (Corda 1993).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U93CUR01NCUS	Currie, Robert R. 1993. Biological Opinion of the U.S. Fish and Wildlife Service concerning the effects of the construction of US 321 in Catawba County on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). 7pp.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
P05HAR01NCUS	Harris, P. S. III. 2005. Letter regarding Hexastylis naniflora Inventory NCDOT TIP No. R-2824. 2pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 13542 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16457

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/26/2015 12:00:00AM
Transcribed By	MJR	**Transcription Date**	5/5/1994 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	MJR	**Paper Mapping Date**	5/5/1994 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:04:57PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501020103
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.370865846526
Hectares	0.150084314978
WATERSHED	191 - 03050102
MAPSHEET	39024 - 35081-F3
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	MJR	**Record Create Date**	5/5/1994 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:23AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 13541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16456

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 19 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22468 **Parent EO Shape ID** 63,724.00 **Parent EO Number** 252

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork, Highway 70 Sites 1-3 (Sub of 252)
NCDOT TIP: R-2824
NCDOT TIP: R-0085 US 321 Bypass site id # 1, 2, and 3

Directions

South Fork Catawba River: Henry Fork, small unnamed tributaries and US 321 (north), Sub of 252. 1 mile southwest of Mountain View School. 3 subpopulations [NC DOT Sites 1, 2 and 3] along unnamed tributaries to Henry Fork, east of SR 1008 and north of SR 1144.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F3	Hickory	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 13541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16456

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Within 2.0 kilometers of sub EO 020; EOs 019 and 20 were not separated by an area of persistently unsuitable habitat at the time of discovery and are therefore linked by principal EO 252 (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49043	1996; Newberry	Site 3, Henry Fork,	Polygon	Delimited				1:24,000 topos (di
49044	1996; Newberry	Site 2, Henry Fork,	Polygon	Delimited				1:24,000 topos (di
49045	1996; Newberry	Site 1, Henry Fork,	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1993, 2005

Element Occurrence Report

EO ID 13541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16456

Surveyor

Surveyor

Corda, NC DOT
HDR personnel
HARP personnel
Franklin
Wichmann
Gill Newberry
Jared Gray, NCDOT

Survey Date 2007

Last Observation Date 2007 **First Observation Date** 1993-08-06

EO Data 2014: Gray reported in 2014 for that supop 1 was divided by US-321 construction and that it will be monitored in 2015; also, subpop 2 was extirpated due to construction; subpop 3 is extirpated at this site but plants from it were moved to Saranac Lake Preserve in SC in the 1990s (NCDOT 2014).
2007: 144 clusters observed at Site 1 by NCDOT in 2007 (NCDOT 2009).
1995/1996: Newberry reported the following conditons in 1995/1996: Site 1-- 100 plants remain north of the "new road" and none south of the road, site had 1000 plants prior to construction; Site 2-- no data reported; Site 3-- no plants remain, plants moved to Saranac Lake Presereve, SC and Site 4 (EO 020), site had 250-300 plants prior to construction (Newberry 1996). 20,000 plants [includes EO 020 (Wichmann 2005)] prior to NCDOT impact, unknown number impacted by US-321 Bypass (HDR personnel 2005). A total of 14,443 plants, scattered between EOs 19 and 20, were located in the construction project area (NCDOT 321) in 1995; more than 3,235 were expected to be impacted by improvement activities. Verification of the current situation is needed, including the number of plants protected on-site (Wells 2006).
1993: "Thousands of individuals seen at sites 1 through 3 [sub-populations A, B and C]" (Currie 1993).
Subpop A [site 1] =about 1000 plants (average 5.2 plants/100 sq ft) over 5.1 acres; Subpop B [site 2] =about 1000 plants (average 3.2/100 sq ft) over 3.7 acres; subpop C [site 3] =about 1000 plants (average 2/100 sq ft) over 3.7 acres; in leaf, flower & some fruit (Corda 1993).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 144 clusters (2007). No plants found (Franklin and Wichmann 2005).

Landscape Context Weedy species, Bypass 321, and clear cut (Franklin and Wichmann 2005).

EO Rank D? - Possibly poor estimated viability **EO Origin Subrank**

EO Rank Date 2007

EO Rank Comments Degraded habitat. Determine whether construction of Hwy 321 should downrank this EO (Franklin 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Area (35.68445105, -81.34436801) full of weedy species, much of the area has been planted in pines and the drainage is thick with Toxicodenron radicans, Rosa multiflora, Diphasiastrum digitatum [Lycopodium flabelliforme], etc. (Franklin and Wichmann 2005). "Relatively good condition" (Currie 1993). Subpop A [site 1]=mature beech stand with occasional white pine; partly disturbed from fallen trees (Hurricane Hugo); Dry, mid to lower slope, open. Subpop B [site2] =Area dominated by mixed hardwoods; dry, lower to upper slope, open/filtered light. Subpop C [site3] =cut-over mixed hardwood/pine-dominated canopy; shrub growth rank; steep slope; dry, lower to upper slope, open/filtered light (Corda 1993).

Min. Elevation	920.00	**feet**	280.00	**meters**
Max. Elevation	1,000.00	**feet**	305.00	**meters**
Observed Area		**acres**		**hectares**

Element Occurrence Report

EO ID 13541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16456

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land N - No **More Protection** N - No **TNC involvement**

Protection Comments EO seems to have been extirpated by construction of the 321 Bypass; no obvious quality habitat in the area (Wichmann 2005). "The Department of Transportation (DOT) will try to acquire in fee title additional righ-of-way at three of the five population sites [includes EO 020 (Wichmann 2005)] (approximately 1 acre at Site 1, 3 acres near Sites 2 and 3, and 1 acre at Site 4[EO 020]). A minimum of 1 site will be aquired within existing project right-of-way, If only one site is acquired on-site, the DOT, after consulting with the Service [FWS], will aquire at least one high quality Hexastylis naniflora site elsewhere in North Carolina (Currie 1993).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE?	

Owner Comments NCDOT is trying to purchase the property (NCDOT 2009).

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Some plants protected in conservation easments outside of construction zones at site1(sub pop 1) and 4 (EO 020 sub pop A) (Wichmann Aug. 2005, per. comm. with J. Gray NC DOT). EO seems to have been extirpated due to construction of the 321 Bypass (Franklin and Wichmann May 2005). "EO 185 (Old EO 19/20) is a large population that was surveyed prior to the construction of the US 321 Bypass south of Hickory. It was a healthy population in three separate areas that consisted of approximately 20,000 H. naniflora plants. During field-checking, it was discovered that this site may have been significantly impacted. However, much of the site is on private property and separated by a new NCDOT ROW fence, which prevented access. According to old survey maps, it is possible that road construction for US 321 and private logging on some of the north-facing slopes have likely impacted the population. Because this site is such a large percentage of the known H. naniflora numbers, it is strongly recommended that NCDOT conduct a comprehensive survey to determine population viability" (HDR personnel, 2005). NC DOT should be consulted to determine whether this EO was impacted by construction of Highway 321 (Franklin 2005). "Approximately 20,000 plants [includes EO 020], unknown number impacted, some preserved in ROW (HDR personnel, 2005). "This project will directly impact 9.0 acres of the total 11.0 acres within the project corridor that contain Hexastylis naniflora [includes EO 020 (Wichmann 2005)]. Sites 3 [EO 019] and 5 [subpop B] will be completely eliminated. Other direct and indirect impacts from this project include disturbance from construction activities that may lead to increased erosion of downslope areas and degradation of Hexastylis naniflora habitat" (Currie 1993). Proposed construction of road project is planned over sites (Corda 1993).

Topic Keywords

Keywords
IMPACTS
NC DOT
TRANSPLANT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 13541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16456

References

Reference Code	Full Citation	EO Reference Primary
U93CUR01NCUS	Currie, Robert R. 1993. Biological Opinion of the U.S. Fish and Wildlife Service concerning the effects of the construction of US 321 in Catawba County on the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). 7pp.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
P05HAR01NCUS	Harris, P. S. III. 2005. Letter regarding Hexastylis naniflora Inventory NCDOT TIP No. R-2824. 2pp.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
G09DOT02NCUS	NCDOT. 2009. Results of monitoring and transplant activities for Helianthus schweinitzii, Helianthus laevigatus, Symphyotrichium georgianum, Sisyrinchium dichotomum, Hexastylis naniflora, Isotria medeoloides, Rhus michauxii, Spiraea virginiana, and Zephyranthes simpsonii.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/26/2015 12:00:00AM
Transcribed By	MJR	**Transcription Date**	5/5/1994 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	MJR	**Paper Mapping Date**	5/5/1994 12:00:00AM
Digital Mapping By	SCM	**Digital Mapping Date**	4/21/2009 12:22:51PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 13541 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16456

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	191 - 03050102
ACREAGE	9.411621
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
HECTARES	3.808763
MAPSHEET	39024 - 35081-F3
HUC_12	030501020103
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	MJR	**Record Create Date**	5/5/1994 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:23AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 13149 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16064

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 73 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name

Broad River/Sandy Run Natural Areas: Middle Sandy Run Crk, E side of Crk extending N from Grog Creek (Sub EO of EO 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Middle Sandy Run Creek, east side of creek extending north from its confluence with Grog Creek. This is a sub EO of principal EO 100 (Wichmann 2005). NC DOT Broad River Tract sites L and M; James Padgett's 2001 Site 9C (Wichmann 2005). Slopes and ravines along the east side of Sandy Run Creek beginning approximately 200 meters north of its confluence with Grog Creek and continuing north along the creek for approximately 1.2 Kilometers (Wichmann 2005, based on map). NC DOT Mitigation site [in part] primarily for R-2707, also known as the IP or Broad River Tract (HDR 2005). Broad River/Sandy Run Natural Areas (Sandy Run Bluff North Subsite): Located 1.8 air miles southwest of Boiling SpringS, NC on the east side of SandY Run north of its confluence with Grog Creek (Oakley 2002).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South	15		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Element Occurrence Report

EO ID 13149 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16064

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province
PD

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS data submitted by Padgett was used to digitize the EO rep associated with this EO record (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30222	2003; NCDOT Cor	Broad River Tract;	Polygon	Delimited				GPS, 3-meter accu
89591	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 13149 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16064

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2003
Qualitative ground survey	2001

Surveyor

Surveyor
Oakley
James Padgett, ASU
NC DOT Personnel
Matt Jones, Garner-Webb Univ. undergrad

Survey Date 2012-04-11

Last Observation Date 2012-04-11 **First Observation Date** 2001-03-06

EO Data 2012: 11,446 total plants: 3550 plants estimated at site L1, 1923 plants estimated at site L2, and 3302 plants estimated at Site II by NCDOT biologists on 10 April 2012. 2671 plants counted at site M by NCDOT biologists on 10-11 April 2012 (Bassette 2015).
2012: Site visited with USFWS, NCDOT , and ASU 15 March 2012 (Padgett 2012) -- Wagner et. al. observed over 1000 plants on 15 March 2012. Plants growing on top of rocks in very shallow soil (Wagner 2012).
2009: Plants observed by Jones in January, April, and June 2009; no count made (Jones 2009).
2009: An additional 3,349 plants counted at site II of Broad River Tract on 20 and 21 April 2009 by NCDOT biologists (Bassette 2009). 3,920 observed by NC DOT personnel (Bassette 2003).
2001:Over 2000 estimated plants along steep north and northwest-facing slopes (Padgett 2001).Vigorous population estimated at 500-1000 plants in leaf and bud on 6 March (Oakley 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO In leaf and bud on 6 March (Oakley 2001).

Condition Rating

Size of EO 1000+ (2012). 8,500+ plants total (2009). 3920 observed by NC DOT personnel (Bassette 2003). Vigorous population estimated at 500-1000 plants (Oakley 2001).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2012-03-15

EO Rank Comments EO rank changed from a B to an A based on EO rank specs for written for this species (Wichmann 2005). Based on rank specifications determined with USFWS.

EO Rank Specifications Version Used

Description

EO Type

General Description Hardwoods majority (Bassette 2003). West and northwest-facing steep slopes, Piedmont/Coastal Plain Heath Bluff with dense ericaceous shrubs; with Quercus spp., Kalmia, Smilax rotundifolia, Galax, etc. (Oakley 2001).

Min. Elevation	680.00	**feet**	207.00	**meters**
Max. Elevation	800.00	**feet**	244.00	**meters**
Observed Area	25.00	**acres**	10.12	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

Element Occurrence Report

EO ID 13149 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16064

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Occurrence is contained within NC DOT mitigation site, the Broad River Tract; see reference U03BAS01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site			N
2429	NC Division of Mitigation Services Easement			N
889	Broad River Greenway			N

More Management

Management Comments Upslope extent of population ends where managed pine plantation begins (Oakley 2001).

Ownership

Owner Type	Owner Name	Owner Note
Private individual	MR. WHITFIELD	
State/provincial gove	NC DOT	

Owner Comments "Ownership of the Broad River Tract will ultimately be conveyed to Cleveland County, with the Broad River Greenway Association acting as the County's steward to the property" (Bassette 2003).

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U09JON01NCUS	Jones, Matthew. 2009. The pollination of Hexastylis naniflora in Cleveland County, North Carolina. Undergraduate thesis, Garner-Webb University.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 13149 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 16064

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/21/2016 12:00:00AM
Transcribed By	JTF	**Transcription Date**	2/4/2003 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	4/21/2016 1:07:42PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
PHYSIOGRAPHIC_PROVINCE	2 - PD
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	26.6443286937
Hectares	10.782593915
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	SCO	**Record Create Date**	1/31/2003 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	8/30/2016 6:13:59PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 13027 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15942

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 3 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20291 **Parent EO Shape ID** 48,337.00 **Parent EO Number** 98

Site/Directions

Sites

Site ID	Name	Auto-calculated
2545	Cat Square Heartleaf Forest	N

Survey Site

Survey Site Name
South Fork Catawba River: Indian Creek, Cat Square Site (Sub EO of EO 098).
Bell's Cat Square Site (per Gaddy, 1981)
Cat Square Heartleaf Forest

Directions

South Fork Catawba River, Indian Creek west of Cat Square. Gaddy (1981) named site "(Bell's) Cat Square Site" in his status survey for NC PCP/USFWS, in reference to one of Bell's two 1957 herbarium specimens from this area (NCU 176118), which Bell describes as "0.4 miles west from Cat's Square". Bell's second 1957 herbarium specimen (NCU 176117) states it was from a location 1.2 miles west of Cat's Square. Gaddy was unable to find the species in this second location (further west) in 1981, but did re-locate the species 0.4 miles west of Cat Square (the presumed location of NCU 176118). NCNHP sub EO 002 refers to specimen NCU 176117, sub EO 003 refers to NCU 176118. Both are sub EOs of Parent EO 98 [C. Wells, 2006].Rich deciduous forest and stream banks 0.4 mile west of Cat Square (Bell 1957).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Element Occurrence Report

EO ID 13027 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15942

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49068	1996; Newberry	South Fork Catawb	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1957, 1984, 2001

Element Occurrence Report

EO ID 13027 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15942

Surveyor

Surveyor

J.T. Soule, HARP
L.R. Gaffney, HARP
D. Gillespie
Bell
L.L. Gaddy
Gill Newberry

Survey Date 2001-04-02

Last Observation Date 2001-04-02 **First Observation Date** 1957-04-28

EO Data 2001: Present, Matthews et al. observed scattered through site on 02 April 2001 (Matthews et al. 2002).
1995: 160 plants observed by Newberry in 1995. Population stable and with many large plants. Houses have been built near site (Newberry 1996).
1981: 50-60 clumps in less than 1 acre observed by Gaddy in 1981, seed production and seedling distribution average, population seems stable despite timber operation (Gaddy 1981).
1980: Observed by Gaddy in 1980 (Gaddy 1980).
1957: Bell collection (1957).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Seed production and seedling distribution average, population seems stable despite timber operation (Gaddy 1981)

Condition Rating

Size of EO 160 plants (1995), 50-60 clumps in less than 1 acre observed (Gaddy 1981)

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 1995

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Community type present is Mesic Mixed Hardwood Forest (Piedmont subtype). This site shows evidence of clear-cutting in the past. All of the trees seem to be even aged and are about the same size. The herb layer is sparse. It appears the this site has been left alone to recover from the logging activity. The canopy is dominated by Liriodendron tulipifera. (Matthews et al 2002). Boggy to mesic creekhead, with Liriodendron, Acer rubrum, Ilex opaca, Osmunda cinnamomea. Area was cut over about 1970 and is very dense.

Min. Elevation	1,000.00	**feet**	305.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

Element Occurrence Report

EO ID 13027 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15942

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Corporation	Sain & SAin Trucking Company	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N

Specimen

Specimen Description
HERB.NCU 176118, C.R.BELL 6640, 28 APRIL 1957.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 11/17/2015 12:00:00AM
Transcribed By ASW **Transcription Date** 9/2/1987 12:00:00AM
Manual File Note

Mapping

Paper Mapping By ASW **Paper Mapping Date** 9/2/1987 12:00:00AM
Digital Mapping By SCM **Digital Mapping Date** 4/27/2009 2:38:04PM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate 3[redacted] **Y Coordinate** [redacted]

Element Occurrence Report

EO ID 13027 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15942

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	191 - 03050102
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
HECTARES	0.791457
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
ACREAGE	1.955724
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39390 - 35081-E4
HUC_12	030501020501
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/2/1987 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	11/18/2015 11:12:27PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 12925 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15840

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 63 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Hayes Lake (This is a sub EO of 099).

Directions

Broad River: Hayes Lake. This is a sub EO of Parent EO 099 (Wichmann 2005). At the head of Hayes Lake, south of SR 1111 and northeast of the Broad River.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	14		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 12925 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15840

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28545	2001; Padgett	Broad River: Hayes	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	2001

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2001-07-31

Last Observation Date 2001-07-31 **First Observation Date** 2001-07-31

Element Occurrence Report

EO ID 12925 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15840

EO Data 2001: Padgett observed 20-25 single leaves to large clumps occurring for 100 feet along the pond head and incoming stream; in leaf only on 31 July 2001 (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO In leaf only on 31 July (Padgett 2001).

Condition Rating

Size of EO 20-25 single leaves to large clumps (Padgett 2001).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-07-31

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Remains of Oak-Hickory Forest surrounded by pasture. associated species include Smilax rotundifolia, Quercus alba, Pinus virginiana, Polystichum acrostichoides, Calycanthus florida, Vitis rotundifolia, Lonicera japonica, Elephantopus tomentosus, and Ulmus alata (Padgett 2001).

Min. Elevation		**feet**		**meters**
Max. Elevation	755.00	**feet**	230.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	Chapman Sod, (864) 472-0269, 300 Park Rd, Inman, SC 2934	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 12925 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15840

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 3/18/2016 12:00:00AM
Transcribed By JLA **Transcription Date** 12/17/2002 12:00:00AM
Manual File Note

Mapping

Paper Mapping By JLA **Paper Mapping Date** 12/17/2002 12:00:00AM
Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 1:16:53PM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.817162026485
Hectares	0.330694250009
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 12925 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15840

Record Create User	JLA	**Record Create Date**	12/17/2002 12:00:00AM
Last Modified By	JLA	**Last Modified Date**	3/18/2016 3:19:07PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 12549 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15464

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 44 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2768	Little Gunpowder Creek Rare Plant Site 1	N

Survey Site

Survey Site Name

Little Gunpowder Creek Rare Plant Site 1 and transplants
NCDOT TIP: R-2824
NCDOT TIP: B-2937 on SR 1108 over Little Gunpowder Creek
NCDOT TIP: U-4700 US 321 Corridor

Directions

Catawba River: Little Gunpowder Creek between SR 1108 and US 321. 1.5 miles north of Granite Falls, South of SR 1108 where it crosses Gunpowder Creek, 0.2 mile north of the US 321 Bypass. Additional plants occur on the south side of US 321 along Little Gunpowder Creek.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Caldwell (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G4	Granite Falls	4		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 12549 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15464

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Polygon created by Padgett using GPS data from site visit, locational uncertainty of 25 meters was applied (Wichmann 2005).

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

More information is needed about the landscape context of this EO to better rank this occurrence (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28452	1998-05-18, Savidg	Little Gunpowder C	Polygon	Delimited				GPS, 3-meter accu
90096	2015; NCDOT	Little Gunpowder C	Polygon	Delimited				GPS, 10-meter acc
90095	2011 April 02; NCI	Little Gunpowder C	Polygon	Delimited				GPS, 10-meter acc
90174	2012, NCDOT	NCDOT TIP U-470	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1998, 2005

Element Occurrence Report

EO ID 12549 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15464

Surveyor

Surveyor

HDR personnel
Lochner personnel
James Padgett, ASU (2000-2003), NHP (2005)
Peter Smith, NHP
Jared Gray, NCDOT
Anne Burroughs, NCDOT
Mary Frazer, NCDOT
Tim Bassett, NCDOT

Survey Date 2011-05-02

Last Observation Date 2011-05-02 **First Observation Date** 1998-05-18

EO Data 2012: present, report pending from NCDOT .
2011: 1,235 clusters counted on 2 May 2011 by Frazer, Bassett, Burroughs and Gray within entire NCDOT mitigation site in 2011 (NCDOT 2014).
2005: 4,262 plants are within construction project area (TIP: B-2937); 324 plants are expected to be impacted by construction activities in 2005; 4,262 plants are to be protected on-site in a 2.7 acre area (Wells 2006). Approximately 4,262 plants were found [extrapolated from sampling 15 circular plots, 1/100 acre in size]; in addition, more than 60 plants were observed north of the old road alignment near the banks of Little Gunpowder Creek outside of NCDOT's property (2005-05);
2000: 1,836 plants estimated by NCDOT staff prior [2000?] to any impacts [from bridge replacement] occurring; 175 plants transplanted to an approximate 2.7 acre permanent conservation easement adjacent to site in November 2000; after three years, Padgett estimates that 68% survived (HDR and HARP personnel 2005).
2000-2003: This is an excellent viable population with over 500 plants located in this easement. This site has one of the only transplanted populations in North Carolina where 175 plants were transplanted from areas to be impacted by bridge replacement before the bridge was replaced (Padgett 2005).
2002: 68% of the transplanted individuals survived as of April 2002, despite drought conditions (Murrell in NCDOT 2009).
2000: In November 2000, 175 individuals were relocated from the right of way of a NCDOT bridge construction site at Little Gunpowder Creek to an adjacent conservation easement (NCDOT 2009).
1998: Between 501 and 1000 plants in a 10-100 square-meter area, densely spaced; in flower on 18 May 1998 (Savidge 1998).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments This site should be visited and the transplant area monitored. The transplants are all flagged (Padgett 2005). NCDOT work at this site was subject to consultation with USFWS (ASNC log no. 4-2-98-147), and the Biological Opinion anticipated impacts to 324 plants, which would be minimized through transplant. NCDOT also commited to 5 years of monitoring at this site in their Biological Assessment [C. Wells, 8/2006].

Research Needs Comments Live plants at Appalachian State University Greenhouse. Plants were collected during the transplant in November of 2000 (Padgett 2005).

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO >1,200 clusters (2011). Approximately 4,262 plants (HDR 2005); over 500 plants, 175 transplanted (Padgett 2005).

Landscape Context Permanent conservation easement (HDR and HARP personnel 2005). Adjacent to Hwy 321 (Wichmann 2005).

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank** r - Reintroduced/restored

EO Rank Date 2011

EO Rank Comments EO rank was changed from an A to a AB based EO rank specs for this species and 2011 data, more data on lansdcape context of this EO is needed to better rank this EO.

EO Rank Specifications Version Used

Description

Element Occurrence Report

EO ID 12549 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15464

EO Type

General Description North-facing slope over Gunpowder Creek with mesic mixed forest. associates include Kalmia latifolia. (Savidge 1998).

Min. Elevation 1,060.00 **feet** 323.00 **meters**

Max. Elevation 1,100.00 **feet** 335.00 **meters**

Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments This site is part of an NCDOT mitigation easement located between the new bridge and US Highway 321 (Padgett 2005). Bridge replacement may impact site (Savage 1998).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
US Department of Tı	NC-DOT	Mitigation easement
Private individual	private	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics "B-2937 (EO 44) is a bridge replacement and road realignment that was completed in 2003. The population was estimated at 1,846 plants by NCDOT staff prior to any impacts occurring. According to James Padgett (via email communication), 175 plants were transplanted from the construction area into an approximate 2.7-acre permanent conservation easement adjacent to the site in November 2000. After three years of monitoring by Padgett, 68% had survived (Padgett, 2004). In May 2005, HDR/HARP visited this site and sampled fifteen 1/100 acre plots. There were approximately 4,262 total H. naniflora plants found on this site yielding a density of 1,567 per acre. In addition, more than 60 plants were observed north of the old road alignment near the banks of Little Gunpowder Creek outside of NCDOT's property" (HDR personnel 2005). This site has one of the only transplanted populations in North Carolina where 175 plants were transplanted before the bridge was replaced; transplants are all flagged (Padgett 2005). Direct construction impacts related to [NCDOT Project] B-2937; 2.68 ac of additional right-of way purchased for a perpetual conservation easement which was expected to protect approximately 1,522 plants (based on species density with the impact area) (Bassette 2003).

Topic Keywords

Keywords
IMPACTS
MITIGATION
NC DOT
TRANSPLANT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 12549 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15464

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
G06WEL01NCUS	Wells, Carolyn. 2006. Dwarf-flowered heartleaf (Hexastylis naniflora) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, NC, Field Office, Asheville, NC.	N
F14DOT01NCUS	N.C. Department of Transportation. 2014. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2014.	N
F11DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2011.	N
F12DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2012.	N

Specimen

Specimen Description
HERB-USCS, T. SAVIDGE 18 MAY 1998.
HERB.BOON 16382, J E PADGETT AND E. GILLESPIE MAY 18, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/26/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	8/5/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	8/4/1998 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	8/26/2016 2:37:32PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 12549 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15464

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010803
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requ
LATITUDE_DD	Not processed per agreement with Plaintiff/Requ
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requ
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requ
UTM_EASTING	Not processed per agreement with Plaintiff/Requ
UTM_NORTHING	Not processed per agreement with Plaintiff/Requ
UTM_ZONE	Not processed per agreement with Plaintiff/Requ
Acreage	3.72619607598
Hectares	1.50794037999
WATERSHED	190 - 03050101
MAPSHEET	38657 - 35081-G4
COUNTY	1830 - NCCALD

Record Maintenance

Record Create User	JLA	**Record Create Date**	8/5/1998 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:14:48PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 12163 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15078

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 36 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 36095 **Parent EO Shape ID** 159,555.00 **Parent EO Number** 307

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

First Broad River: Beaver Dam Creek, unnamed tributary S of the Seaboard RR and E of SR 1315

Directions

First Broad River: Beaver Dam Creek, unnamed tributary just south of the Seaboard Railroad and east of SR 1315 (Wichmann 2005). North of SR 1314 and west of 1313, in an unnamed tributary of Beaverdam Creek.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby	4		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 12163 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15078

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Suitable habitat nearby should be searched.

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
12162	1997-06-04; Newb	First Broad River: E	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	1997

Surveyor

Surveyor
Newberry
Huysman

Survey Date 1997-06-04

Last Observation Date 1997-06-04 **First Observation Date** 1997-06-04

Element Occurrence Report

EO ID 12163 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15078

EO Data In two locations observed by Newberry and Huysman. Sparse population of multiple-aged Dwarf Heartleaf plants on 4 June 1997 (Newberry & Huysman 1997).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 1997-06-04
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description MIXED HARDWOODS, LOWLANDS

Min. Elevation	840.00	**feet**	256.00	**meters**
Max. Elevation	900.00	**feet**	274.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Large commercial development observed via 2012 aerial imagery immediately adjacent to the population and may have caused direct or indirect impacts (Robinson 2016). Second population will be impacted by sewerline construction and may be transplanted into first population.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments Near the sewer outfall right-of-way of Cleveland County.
OwnerInfo_BCD N

Additional Topics

General Comments This project is the subject of a development grant application (2010).
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 12163 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15078

References

Reference Code	Full Citation	EO Reference Primary
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	4/15/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	9/11/1997 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	9/11/1997 12:00:00AM
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	40121 - 35081-C5
WATERSHED	194 - 03050105
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	35.319
UTM_NORTHING	3908597.660025
ACREAGE	7.71
HUC_12	030501050704
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	JLA	**Record Create Date**	9/11/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	4/15/2016 6:11:05PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 12161 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15076

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 51 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River/Sandy Run Natural Areas: Sandy Run Crk; perennial tributary N of Flint Hill (Sub of 100)
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Sandy Run Creek, perennial tributary north of Flint Hill; NC DOT Broad River Tract sites AA and BB; James Padgett's 2001 sites A, B, C, D,E, F, G, and H. This is a sub EO of Principal EO 100 (Wichmann 2005). NC DOT Mitigation site [in part] primarily for R-2707, also known as the IP or Broad River Tract (HDR 2005). About 3 miles south of Boiling Springs, on the banks of the first upstream, permanent stream tributary on the east side of Sandy Run from its confluence with Broad River.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South	7		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 12161 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15076

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
12160	2001; Padgett	Sandy Run Creek	Polygon	Delimited				1:24,000 topos (pa
30230	2003; NCDOT Cor	Broad River Tract S	Polygon	Delimited				GPS, 10-meter acc
30231	2001; NCDOT	Sandy Run Creek, s	Polygon	Delimited				1998 aerial photos
30233	2001; NCDOT	Sandy Run Creek, S	Polygon	Delimited				GPS, 3-meter accu
30234	2003; NCDOT con	Broad River tract, S	Polygon	Delimited				GPS, 3-meter accu
89570	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89568	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 12161 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15076

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2003

Surveyor

Surveyor
HDR Engineering Inc. Personnel
NC DOT Personnel
James Padgett, ASU

Survey Date 2012-04-11

Last Observation Date 2012-04-11 **First Observation Date** 2001-02-06

EO Data 2012: 17 plants counted at population AA and 2346 plants counted at population BB by NCDOT biologists on 11 April 2012. (Bassette 2015).
2008: 515 plants counted at sites AA and BB by NCDOT biologists in April 2008 (Bassette 2009).
2003: 11 individuals scattered among rock outcroppsings (HDR 2003). 310 observed by NC DOT (Bassette 2003).
2002: Parts of this EO visited in 2001 and 2002 with NCDOT while plants were in flower (Padgett 2002).
2001: Over 1000 clumps estimated over a 0.5 mile area, with buds on 6 February. Many seedlings present (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Population BB appears to be in excellent condition. Plant counts here have increased by five times since the 2008-2009 surveys. Many robust rosettes (vegetatively speaking) are present at this location. Approximately 50 % of this population exhibited new
leaf growth. Population BB exhibited a lower percentage of plants in flower than many of the other Broad River Greenway Conservation Area populations.EO seen in flower in 2001 and 2002 with NCDOT (Padget 2002). With buds on 6 February. Many seedlings present (Padgett 2001).

Condition Rating

Size of EO 310 observed by NC DOT (Bassette 2003). Over 1000 clumps estimated over a 0.5 mile area (Padgett 2001).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2008-04

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description On the north to northwest facing slopes of permanent and perennial tributaries to Sandy Run. Element occurs in good canopy openings. associated species include Botrychium dissectum, Goodyera pubescens, Tipularia discolor, Acer rubrum, ilex opaca, Kalmia latifolia, Rhododendron minus, Quercus prinus, Quercus alba, Leucothoe axillaris, and Oxydendron arboreum.

Min. Elevation	680.00	**feet**	207.00	**meters**
Max. Elevation	842.00	**feet**	257.00	**meters**
Observed Area	9.00	**acres**	3.64	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

Element Occurrence Report

EO ID 12161 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15076

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments NC DOT mitigation site [in part] see References U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005). Land purchased by NCDOT and dedicated to the Broad River Greenway in 2003 (Padgett 2005). Land is reported to be sold to developers (2001).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
889	Broad River Greenway		N - No	N
2429	NC Division of Mitigation Services Easement		N - No	N
2492	NC Department of Transportation Mitigation Site		N - No	N

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Local government	Broad River Greenway	Cleveland County and the town of Boiling Springs.
Corporation	International Paper	

Owner Comments Broad River Greenway (Padgett 2005). --International Paper and others

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS and U03BAS01NCUS (Wichmann 2005).

Topic Keywords

Keywords
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
FNDCLE01NCUS	Oakley, S.C. 2002. Field surveys for Cleveland County natural areas inventory, 2002.	N
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U03BAS01NCUS	Bassette, Tim. 2003. Biological Assessment for Dwarf-Flowered Heartleaf (Hexastylis naniflora) for the Proposed US 74 Bypass Around Shelby, Cleveland County, NC.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description
HERB.ASU, J. Padgett, 2001
HERB.GARDNER WEBB, J. Padgett 2001

CDREV_BCD N

Version/QC

Element Occurrence Report

EO ID 12161 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 15076

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	4/18/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/1/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/20/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	4/19/2016 2:09:51PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement	**Y Coordinate**	Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	93
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	33.4168254616
Hectares	13.5233303501
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	JLA	**Record Create Date**	2/21/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	5/31/2016 9:05:22AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 10585 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13501

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 69 **Field Office Number**

ID Confirmed ? - Questionable

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20290 **Parent EO Shape ID** 48,332.00 **Parent EO Number** 97

Site/Directions

Sites

Site ID	Name	Auto-calculated
561	Sandy Run/Lovelace Natural Area	N

Survey Site

Survey Site Name
Broad River: Sandy Run/Lovlace Natural Area (Sub EO of EO 097)

Directions

Catawba River: Sandy Run Creek, Sandy Run/Lovelace Natural Area: This is a sub EO of Parent EO 097 (Wichmann 2005). 1.7 air miles northwest of Boiling Springs, NC and 0.4 mile due west of the end of Lovelace Rd.(SR 1165), on the east side of Sandy Run (Oakley 2002).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province
PD

Mapping

Element Occurrence Report

EO ID 10585 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13501

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

OCCURRENCE IN NEED OF VERIFICATION, CALYX TUBE OPENING EXCEEDS 5mm IN WIDTH (OAKLEY 2002).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49057	2002; NCNHP	Lovelace	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Surveyor
Oakley

Survey Date 2002-04-25

Last Observation Date 2002-04-25 **First Observation Date** 2002-04-25

EO Data Estimate of 100 plants in leaf and flower on 25 April (Oakley 2002).

Element Occurrence Report

EO ID 10585 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13501

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Estimate of 100 plants in leaf and flower on 25 April (Oakley 2002).
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 2002-04-25
EO Rank Comments ID needs verification to be ranked (Robinson 2015).

EO Rank Specifications Version Used

Description

EO Type
General Description Young-mature Dry-Mesic Oak--Hickory Forest on gentle north-facing slope with Liriodendron, Quercus alba, Q. rubra, Acer rubrum, Polystichum acrostichoides, Sanguinaria canadensis, Anisostichus capreolata, and others (Oakley 2002).

Min. Elevation	720.00	**feet**	219.00	**meters**
Max. Elevation	740.00	**feet**	226.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	MYRTLE BEASON HEIRS	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Occurrence in need of verification, calyx tube opening exceeds 5mm in width (Oakley 2002).
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 10585 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13501

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/17/2015 12:00:00AM
Transcribed By	SCO	**Transcription Date**	1/27/2003 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	SCM	**Digital Mapping Date**	4/22/2009 12:25:42PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
PHYSIOGRAPHIC_PROVINCE	2 - PD
Site_Code	561
SITE	561.000000 - S.USNCHP*2251
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
ACREAGE	13.850752
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	5.605223
MAPSHEET	40120 - 35081-C6
WATERSHED	194 - 03050105
HUC_12	030501050505

Record Maintenance

Record Create User	SCO	**Record Create Date**	1/27/2003 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	11/17/2015 11:49:50AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 10584 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13500

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 70 **Field Office Number**

ID Confirmed ? - Questionable

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
1664	Hicks Hill Bluffs and Forests	N

Survey Site

Survey Site Name
First Broad River: Hicks Hill Bluffs and Forests

Directions

First Broad River: Hicks Hill Bluffs and Forests: ca. 1.5 air miles northwest of Lawndale on the south side of two sharp bends in the First Broad River, 0.7 mile northeast and east-northeast of the junction of Hicks Hill Road (SR 1501) and Harris Creek Road (SR 1503).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D5	Lawndale	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province
PD

Mapping

Element Occurrence Report

EO ID 10584 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13500

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Occurrence in need of verification, very late flower, calyx tube opening exceeds 5mm in width (Oakley 2002).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
10584	2002; Oakley	Hicks Hill Bluffs ar	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Surveyor
Oakley

Survey Date 2002-06-28

Last Observation Date 2002-06-28 **First Observation Date** 2002-06-28

EO Data Estimate of 100-200 plants, a few in very late flower, on 28 June (Oakley 2002).

Element Occurrence Report

EO ID 10584 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13500

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO ESTIMATE OF 100-200 PLANTS, A FEW IN VERY LATE FLOWER, ON 28 JUNE (OAKLEY 2002).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2002-06-28
EO Rank Comments BASED ON RANK SPECIFICATIONS DETERMINED WITH USFWS.

EO Rank Specifications Version Used

Description

EO Type
General Description Steep, north-facing slope with mature mesic hardwood canopy; with diverse mesic hardwoods, Tsuga canadensis, Kalmia, Rhododendron maximum, sparse acidic herbs (Oakley 2002).

Min. Elevation	820.00	**feet**	250.00	**meters**
Max. Elevation	900.00	**feet**	274.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	JIM EAKER	145 Jim Eaker Road, Lawndale NC 28090

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments OCCURRENCE IN NEED OF VERIFICATION, VERY LATE FLOWER, CALYX TUBE OPENING EXCEEDS 5mm IN WIDTH (OAKLEY 2002).

Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 10584 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13500

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	SCO	**Transcription Date**	1/27/2003 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39753 - 35081-D5
WATERSHED	194 - 03050105
PHYSIOGRAPHIC_PROVINCE	2 - PD
Site_Code	1664
SITE	1664.000000 - S.USNCHP*2237
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
ACREAGE	7.71
HUC_12	030501050606
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	SCO	**Record Create Date**	1/27/2003 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	10/21/2015 2:46:25PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 10553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13469

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 12 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22401 **Parent EO Shape ID** 63,260.00 **Parent EO Number** 243

Site/Directions

Sites

Site ID	Name	Auto-calculated
1770	Jacob Fork West Corridor	N

Survey Site

Survey Site Name
Catawba Wildlife Club, sub EO of EO 243

Directions

Located to the south of Jacob Fork, north of Lynn Mountain Rd (SR 1108), and east of Wildlife Rd (SR 1109); primarily on Catawba Wildlife Club property. This is a sub EO of Parent EO 243 (Wichmann 2005).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 10553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13469

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49042	1995; Newberry	Catawba Wildlife C	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981,1985, 2005

Surveyor

Survevor
L.L. Gaddy
Julie Moore
Gill Newberry

Element Occurrence Report

EO ID 10553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13469

Survey Date 1995
Last Observation Date 1995 **First Observation Date** 1981-05
EO Data 2013: Tried four times in May 2013 to get permission to visit site and did not get a return call or email (Padgett 2013).
2005: Gate locked, no data (Franklin et al. 2005).
1995: Over 1000 plants observed by Newberry in 1995 [count includes EO 242] (Newberry 1996).
1985: Verified by Moore (1985).
1981: Over 1000 plants in clearcut patches and mature mesic hardwood slope observed by Gaddy in May 1981; population very vigorous; seed production very good; many seedlings (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Although roads cut through the population, it remains extensive and healthy (1995).

Condition Rating
Size of EO
Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 1995
EO Rank Comments One of the largest known populations (1981).

EO Rank Specifications Version Used

Description

EO Type
General Description Mature to recently cut-over, with canopy of Quercus alba, Q. coccinea, Liriodendron, Acer rubrum. Well-drained mesic site.

Min. Elevation	1,000.00	**feet**	305.00	**meters**
Max. Elevation	1,050.00	**feet**	320.04	**meters**
Observed Area	20.00	**acres**	8.09	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** N - No **TNC involvement**
Protection Comments Registered Natural Area

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
704	Catawba County Wildlife Club RHA		N - No	N

More Management ? - Questionable
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private organization	Catawba County Wildlife Club	3571 Robinson Road, Newton, NC 28658
Private individual	Harry and Jo Ann Wilfong	3571 Robinson Road, Newton, NC 28658; (704) 462-2582

Owner Comments Wilbur Roney?(2002). Mr and Mrs. Wilfong were contacted in 2005 prior to site visit, a letter was sent with no response, M. Franklin called on the day of visit with no answer, call was returned days later (Wichmann and Franklin 2005). Correspondance with Catawba County Wildlife Club occurred in 2012, with permission to visit, but without follow-through on the Club's part to arrange access.
OwnerInfo_BCD Y

Element Occurrence Report

EO ID 10553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13469

Additional Topics

General Comments
Additonal Topics
Topic Keywords
Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
F85NHP01NCUS	NCNHP Staff, 1985 Field Survey.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen
Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 3/23/2016 12:00:00AM
Transcribed By - **Transcription Date** 1/1/1982 12:00:00AM
Manual File Note

Mapping

Paper Mapping By - **Paper Mapping Date** 1/1/1982 12:00:00AM
Digital Mapping By SCM **Digital Mapping Date** 4/21/2009 11:40:43AM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point
X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 10553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13469

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1834 - NCCATA
WATERSHED	191 - 03050102
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
HECTARES	7.061763
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
ACREAGE	17.449927
MAPSHEET	39390 - 35081-E4
HUC_12	030501020202

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/8/1987 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	3/23/2016 6:12:46PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 10378 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13294

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 55 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake (Sub EO of EO 099). USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake. This is a sub EO of parent EO 099 (Wichmann 2005). Subpopulation 1[A] is east of Jack McKinney Road (SR 1111) About 0.9 mile north of the Broad River on two small springs which fork into a pond which drains into Richardson Creek (Padgett 2001). Subpopulation 2 [See EO 079] is off of SR 1115 south of Harris approximately 0.3 mile behind Riverside Church on north facing slope of unnamed tributary of Richardson Creek. Subpopulation 3 [B] Is 0.1 mile north of subpopulation 1 along a spring (Padgett 2002).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	12		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Element Occurrence Report

EO ID 10378 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13294

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

This EO is comprised of two sub-occurrences which are located east of SR 1111 and west of Richardson Creek; former subpopulation 3 of this EO is now sub EO 079 and is located east of Richardson Creek; EO 055 and EO 079 are sub EOs of principal EO 099; all sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28916	2012; Padgett; Sub	Broad River: Richa	Polygon	Delimited				1998 aerial photos
28936	2012; Padgett; Sub	Broad River: Richa	Polygon	Delimited				1998 aerial photos
68200	Padgett EO 55 plot	Richardson Creek,	Polygon	Delimited				GPS, 10-meter acc
89960	Bloom 2016; sub p	Broad River: Richa	Polygon	Delimited				GPS, 10-meter acc
89961	Bloom 2016; sub p	Broad River: Richa	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 10378 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13294

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2002

Surveyor

Surveyor
James Padgett, ASU (2001); NHP (2005)
Kimberly Israel, NHP
Sean Bloom, CLC
Maxwell Feldman, NHP intern

Survey Date 2016-05-25

Last Observation Date 2016-05-25 **First Observation Date** 2001-04-01

EO Data 2015: 3011 plants counted by Padgett and Feldman on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres (Padgett and Feldman 2015).
2014: Padgett counted 3094 plants within monitoring plots for principal EO 99 on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area (Padgett 2014).
2013: Monitoring Data is part monitoring data for Principle EO 99 (Padgett 2013). 1116 plants counted by Padgett and Israel on 7 May 2013 (Padgett 2013).
2012: 1309 plants were counted by Padgett and Israel on 16 July 2012 (Padgett 2012). Area impacted by logging in summer of 2005 (Padgett 2005).
2001: Subpopulation 3 [b]: more than 50 single leafs and clumps of leaves observed along 50-75 feet of spring; in bud on 2 february, seedlings present (Padgett 2002). Subpopulation 1[a]: 100-200 clumps plus single and double leaves occur along 200 feet of each springhead; not many young plants present; Subpopulation 2 [See EO 079]: 200-300 clumps along 100 yard of the stream; high flower numbers and seedling numbers especially in the cutover portion of the site; both populations have plants in leaf and flower on 1 April (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Area impacted by logging in summer of 2005 (Padgett 2005). Subpopulation 3 [B]: more than 50; Subpopulation 1[A]: 100-200 clumps (Padgett 2001).

Landscape Context

EO Rank AB - Excellent or good estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-19

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Subpopulation 3 [B]: Mixed Hardwood community on an upland flat along a moist to dry moisture regime, with moderately filtered to shady light conditions. Associated species found at the survey site include: Acer rubrum, Liriodendron tulipifera, Quercus alba, Viburnum spp., Cornus florida, and several ferns spp. (Padgett 2002). Subpopulation 1[A]: mesic hardwood community including Fagus grandifolia, Pinus virginica, Polystichum acrostichoides and Lonicera japonica. Area was cutover about 25 years ago. Subpopulation 2 [See EO 079]: Mesic hardwood cove community including Quercus alba, Sanguinaria canadensis, Polystichum acrostichoides, and Hepatica americana. Part of the area was cutover in the past 5 years (Padgett 2001).

Min. Elevation	215.00	**feet**	66.00	**meters**
Max. Elevation	220.00	**feet**	67.00	**meters**
Observed Area		**acres**		**hectares**

Protection

Element Occurrence Report

EO ID 10378 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13294

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments Area impacted by logging in summer of 2005 (Padgett 2005). Evidence of off-road vhicle use damaging some of the habitat at subpopulation 1[A] (Padgett 2001).

Ownership

Owner Type	Owner Name	Owner Note
Private individual	William Lowe, P O Box 48, Harris 28074	2012 permission request, email response with permission granted
Corporation	Chapman Sod LLC	2012 permission request, did not respond. 2016, responded to phone call with permission.

Owner Comments Chapman Sod Farm Manager Jamie Spears 864-680-3509 (2016).

OwnerInfo_BCD Y

Additional Topics

General Comments

Additonal Topics Landowner has logged parts of the tract where some of this EO is present. A 100 foot buffer was left along stream corridor where this EO occurs. Parts of the EO was impacted along slopes away from the stream on a north-facing slope that was logged. The plants persist after the logging in the impacted area. It is not known wheither the species can survive clear-cutting events in the long term. Known populations occurring in clearcuts seem to thrive after clearcutting for a short time, then decline rapidly (Padgett 2005).

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U13PAD01NCUS	Padgett, J. 2013. Hexastylis naniflora monitoring data. NC Natural Heritage Program.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Element Occurrence Report

EO ID 10378 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 13294

Specimen

Specimen Description

HERB.BOON 15992, J E PADGETT APRIL 04, 2001
HERB.BOON 16001, J E PADGETT APRIL 04, 2001
HERB.BOON 16385, J E PADGETT APRIL 20, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	6/17/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	10/8/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/5/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	6/17/2016 11:07:49AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	3.95691141683
Hectares	1.60130771001
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	JLA	**Record Create Date**	10/8/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	6/17/2016 6:12:42PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 9779 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12695

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 53 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: McKinney Bridge (This is a sub EO of 099).

Directions

Broad River: McKinney Bridge. This is a sub EO of Parent EO 099 (Wichmann 2005). Middle Broad River: 0.2 mile west of McKinney Road (SR1111) bridge over the Broad River on steep north-facing bluff.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	10		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 9779 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12695

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28540	2003; Padgett	Broad River: McKi	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2003

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2003-05

Last Observation Date 2003-05 **First Observation Date** 2001-04-02

Element Occurrence Report

EO ID 9779 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12695

EO Data 2003: Less than 35 clumps estimated (Padgett 2003).
2001: Fewer than 35 clumps and single and double leaves seen in a 100 square-foot area; plants in flower on 2 April, but population shows poor reproduction (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Less than 35 clumps estimated (Padgett 2003).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2003-05

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic hardwoods along a bluff overlooking the river with Quercus alba and Kalmia latifolia abundant (Padgett 2001).

Min. Elevation	200.00	**feet**	60.96	**meters**
Max. Elevation	230.00	**feet**	70.10	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments Some trees have been cut along the edge of the site recently (Padgett 2003).

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 9779 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12695

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	10/8/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/5/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:14:13PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
PARENT_EO_ID	17815
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.237388398973
Hectares	0.0960678250028
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 9779 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12695

Record Create User	JLA	**Record Create Date**	10/8/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/8/2015 11:09:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 9318 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12234

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 38 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20289 **Parent EO Shape ID** 48,327.00 **Parent EO Number** 96

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Catawba River: Deal Property (Sub EO of EO 096)

Directions

Catawba River: Clarence Street, east of Balls Creek Road (SR 1810), 2 miles SW of Shiloh Church (Newberry 1996).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F1	Catawba	4		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 9318 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12234

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located within 2.0 kilometers of sub EOs 039 and 184 and not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
9318	1996; Newberry	Claremont	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996

Surveyor

Survevor
Gill Newberry

Survey Date 1996-06

Last Observation Date 1996-06 **First Observation Date** 1996-06

EO Data 100-200 plants seen (Newberry 1996).

Element Occurrence Report

EO ID 9318 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12234

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 100-200 plants seen (Newberry 1996).
Landscape Context In seepage areas with Sphagnum (Newberry 1996).

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 1996-06-01
EO Rank Comments Changed from a C to a CD to based on available data and EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description In seepage areas with Sphagnum (Newberry 1996).

Min. Elevation	940.00	**feet**	287.00	**meters**
Max. Elevation	960.00	**feet**	293.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	CLYDE DEAL,	4344 CLARENCE STREET, CLAREMONT, NC

Owner Comments
OwnerInfo_BCD Y

Additional Topics

General Comments In Newberry (1996), she reports the location as "Claremont Street"; I think this is an error it should be Clarence Street in the town of Claremont because Newberry indicates the property owner, Mr. Deal, lives at "4344 Clarence Street, Claremont, NC" and there is no Claremont Street in this whole area - not near where Newberry has it mapped nor where NHP has it mapped. Also, 4344 Clarence Steet does not exist; however, a Sylvia Deal has owned 4355 Clarence St. since 1993, but this is not near where Newberry has her occurrence mapped on the topo in the report, nor is it southwest of Shiloh as Newberry indicates in the location. It is west of Murray's Mill Pond though, consistant with part of Newberry's discription. 1993 and 1998 aerials do not indicate habitat where Newberry has this occurrence. Did not change NHP mapping to match where Newberry indicates the occurrece on her topo; occurrence remains mapped to Clarence Street (Mason 2009).

Additonal Topics

Element Occurrence Report

EO ID 9318 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12234

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/18/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/18/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/26/1998 12:00:00AM
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39026 - 35081-F1
WATERSHED	190 - 03050101
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
ACREAGE	7.71
HUC_12	030501011104
COUNTY	1834 - NCCATA

Record Maintenance

Element Occurrence Report

EO ID 9318 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 12234

Record Create User	JLA	**Record Create Date**	3/18/1998 12:00:00AM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:40:41AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 8495 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11411

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 39 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20289 **Parent EO Shape ID** 48,327.00 **Parent EO Number** 96

Site/Directions

Sites

Site ID	Name	Auto-calculated
772	Murrays Mill/Upper Balls Creek Natural Area	N

Survey Site

Survey Site Name

Catawba River: Balls Creek, Murrays Mill Lake South (sub EO of EO 096).

Directions

Catawba River: Balls Creek, Murrays Mill Lake South. This is a sub EO of Parent EO 096 (Wichmann 2005). Shiloh Church; southwest side of Murrays Mill Lake on the north-facing slope north of the cemetery of Shiloh Methodist Church.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Catawba (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F1	Catawba	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 8495 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11411

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

This is probably part of a larger overall site which existed before the creation of the lake. Subpopulations are probably found along the lake on both side (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28910	2002-04-18; PadgeShiloh Church		Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996, 2001, 2002

Surveyor

Surveyor
James Padgett, ASU
Newberry

Element Occurrence Report

EO ID 8495 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11411

Survey Date 2002-04-18
Last Observation Date 2002-04-18 **First Observation Date** 1996-06
EO Data 2002: Less than 50 plants along the edge of the lake, viability is good with numerous flowers seen in 2001 and 2002 (Padgett 2002).
1996: About 50 plants observed (Newberry1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO viability good with many flowers seen (Padgett 2002)
Condition Rating
Size of EO Less than 50 plants along the edge of the lake (Padgett 2002)
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2002-04-18
EO Rank Comments Downgraded from a C to a D based on 2002 data and EO rank specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description This site occurs in a small wooded area between a maintained meadow (below cemetary to Shiloh Methodist Church) and Murray's Mill Lake. The wooded area along the lake was fairly immature with numerous tree species present as sapplings. Various Quercus ssp. and Acer rubrum are dominant (Padgett 2005).

Min. Elevation	900.00	**feet**	274.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005). Current information (provided by NCDOT) indicates that NCDOT purchased property partially encompassed by EO 184, and no portion of current EO 39 [C. Wells, personal communication with Dennis Herman and Jared Gray, NCDOT, August 2006].

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	SHILOH METHODIST CHURCH?

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 8495 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11411

Additonal Topics Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F96CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U04DOT01NCUS	NC Department of Transportation and Catawba Coutny Historical Association. 2004. Draft Conservation Plant for Murrays Mill Conservation Area, Catawba County, NC. 2pp.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/18/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/18/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/26/1998 12:00:00AM
Digital Mapping By	SCM	**Digital Mapping Date**	4/21/2009 10:46:24AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 2 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 8495 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11411

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	772
SITE	772.000000 - S.USNCHP*2197
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
HECTARES	0.422329
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
ACREAGE	1.043593
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39026 - 35081-F1
HUC_12	030501011104
COUNTY	1834 - NCCATA

Record Maintenance

Record Create User	JLA	**Record Create Date**	3/18/1998 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 8494 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11410

Summary

Classification Code

Subnational Scientific Name	*Hexastylis naniflora*	**Nation**	US	**Global Rank**	G3
Subnational Common Name	Dwarf-flowered Heartleaf	**Subnation**	NC	**Subnational Rank**	S3

Identifiers

ELCODE_BCD	PDARI03060	**EO Number**	40	**Field Office Number**	
ID Confirmed	Y - Yes				

Element

Element Subnational ID	15335	**Protection Status**	T	**Data Sensitive Element**	

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID	22416	**Parent EO Shape ID**	63,462.00	**Parent EO Number**	248

Site/Directions

Sites

Site ID	Name	Auto-calculated
2441	Jonas Road Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: McKinney Creek, Jonas Road Rare Plant Site (Sub EO of EO 248)

Directions

Broad River: McKinny Creek, Jonas Road Rare Plant Site. This is a sub EO of Parent EO 248 (Wichmann 2005). 1.5 miles south of the Broad River and 0.5 mile south of McKinney Creek along an unnamed tributary. 0.5 mile west of the junction of Jonas Road (SR 1109) and Harris Road (SR 1110).

Locators

Latitude	Not processed per ag Not processed per ag	**Longitude**	Not processed per agreem Not processed per agreem
South	**North**	**East**	**West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	8		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 8494 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11410

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

This population may extend both above and below the original survey area (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

EO is located less than 1.0 from the South Carolina border (Wichmann 2005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28922	2005; Padgett	Jonas Road Rare Pl	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994, 2005

Surveyor

Survevor
Newberry
James Padgett, NHP

Element Occurrence Report

EO ID 8494 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11410

Survey Date 2005-04-12
Last Observation Date 2005-04-12 **First Observation Date** 1994-06
EO Data 2005: 150-200 plants estimated along for approx. 0.30 mile (Padgett 2005).
2001: Site visit for collection of flower and leaf materials for research (Padgett 2004).
1994: 50- 100 plants seen, multiple aged stands (Newberry 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments J.E Padgett 2001, Site visited for collection of flower and leaf materials for research.

EO Rank

EO Rank Factor Survey Data

Condition of EO multiple age stands (Newberry 1994).
Condition Rating
Size of EO 150-200 estimated (Padgett 2005).
Landscape Context Dry-Mesic Oak--Hickory Forest with a thick Kalmia understory (Padgett 2005).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2005-04-12
EO Rank Comments Downgraded from a BC to a C based on EO data and EO Rank Specs written for this species (Wichmann 2005).
EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak--Hickory Forest with a thick Kalmia understory along a moderately steep slope and streambed. The dominant canopy species include Quercus alba, Quercus coccinea, Liriodendron tulipifera, Acer rubrum, Fagus grandiflolia. Other associated species include Oxydendrum arboreum, Cornus florida, Polystichium acrostichoides, Chimaphilia maculata, and Goodyera repens (Padgett 2005).

Min. Elevation	705.00	**feet**	214.88	**meters**
Max. Elevation	840.00	**feet**	256.03	**meters**
Observed Area	31.00	**acres**	12.55	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 8494 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11410

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/26/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/18/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/26/1998 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/2/2015 10:04:04AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 8494 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11410

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2441.000000 - S.USNCHP*4314
SITE	2493.000000 - S.USNCHP*4588
Site_Code	62950
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	5.35535984753
Hectares	2.16724058499
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	JLA	**Record Create Date**	3/18/1998 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:36PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 8307 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11223

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 21 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 30023 **Parent EO Shape ID** 119,751.00 **Parent EO Number** 295

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Hickory Area, Catawba River: Geitner Park, behind Boy Scout Building [Proposed Bike Path] (Sub EO of EO 295)

Directions

Catawba River: Geitner Park, slope behind Boy Scout Building, Sub EO of EO 295. Along Catawba River northeast of US 321 crossing, about 2000 feet northwest of 12th Street Drive NW and 17th Avenue intersection behind Boy Scout building. EO is located "between the paved bike path and the Catawba River. Down a dirt trail behind a boarded up stone building...plants are on both sides of the path...EO extends along the slope to the south, along the river" (M. Franklin 2005).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G3	Bethlehem	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 8307 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11223

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Source polygon was created using GPS Waypoint data collected in May 2005 by M. Franklin, point were collected along the perimeter of the population and then connected to form a polygon using GIS (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28456	2005; NCNHP	EO 021. Geitner Pa	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994, 2005

Element Occurrence Report

EO ID 8307 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11223

Surveyor

Surveyor

Misty (Franklin) Buchanan, NCNHP
Brenda Wichmann, NCNHP
Todd
Savidge
Gill Newberry

Survey Date 2005-05-11

Last Observation Date 2005-05-11 **First Observation Date** 1994-04-12

EO Data 2005: 300+ counted, many more present; most flowering (M. Franklin and Wichmann 2005).
1996: Trail passes through population but the disturbance is slight (Newberry 1996).
1995: 200-250 plants observed by Newberry in 1995.
1994: 50-100 plants in leaf & flower on 12 April (Todd & Savidge 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Most flowering (2005). Multi-aged population and healthy (1995).

Condition Rating

Size of EO More than 300 (2005).

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-11

EO Rank Comments EO rank is based on EO Rank Specs for this species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Community seems to fit a Pine-Oak Heath, but slightly sheltered -- not as Xeric; perhaps it better fits a Low Mountain White Pine Forest; Canopy dominated by Pinus storbus, very large Pinus spp., and Quercus prinus; understory dominated by Halesia sp., Kalmia carolina, and Oxydendrum arboreum; Also present: Juniperus virginiana, Pinus strobus saplings, Acer rubrum, Hammemalis virginica, Eonymus americanus, Carya spp., Quercus spp. (including Q. alba, Q. velutina, Q. phellos), Castanea dentata (seedling), and Symplocos tinctoria; herbaceous layer includes: Chimophila maculata, Mitchella repens, Danthonia sp., Vitis rotundifolia, Maianthemum racemosum, Galax urceolata, Polysichium acrosticoides, Goodyera pubescens, Vaccinum Af. pallidum, Lonicera sempervirens, Sanguinaria canadensis, Dichanthelium sp., and Hedera helix (1 small clump, pulled up) (M. Franklin and Wichmann 2005). Sloping hardwood canopy; moist, filtered light/shaded with Goodyera pubescens.

Min. Elevation	1,060.00	**feet**	323.09	**meters**
Max. Elevation	1,100.00	**feet**	335.28	**meters**
Observed Area	2.10	**acres**	0.85	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Bicyle path present, appears not to have impacted EO however, foot traffic through EO may have increased as a result of bicyle path (M. Franklin and Wichmann 2005). Proposed bicycle path with consultation pending with USFWS (1994).

Element Occurrence Report

EO ID 8307 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11223

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
2251	Catawba County Open Space			N

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments "park is jurisdiction of Hickory Parks and Recreation. Mr. McCloud is the director...(B. Rayfield 2005).

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO associated with NC DOT project site (bike path), plants impacted (if any) unknown, see U05HDR01NCUS (Wichmann 2005).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
U06MOY03NCUS	Moye, William S. 2006. Highly Ranked Plants of the South Mountain Region. Unpublished notes sent via email to Misty Franklin in February 2006.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/26/2015 12:00:00AM

Transcribed By MJR **Transcription Date** 6/8/1994 12:00:00AM

Manual File Note

Mapping

Paper Mapping By MJR **Paper Mapping Date** 6/7/1994 12:00:00AM

Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 1:08:28PM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Element Occurrence Report

EO ID 8307 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11223

Other Spatial Attributes

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501010804
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	1.19341477441
Hectares	0.482958570003
WATERSHED	190 - 03050101
MAPSHEET	38658 - 35081-G3
COUNTY	1828 - NCBURK

Record Maintenance

Record Create User MJR **Record Create Date** 6/8/1994 12:00:00AM

Last Modified By JTF **Last Modified Date** 10/26/2015 11:10:07PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 8209 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11125

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 56 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek (sub EO of EO 247)

Directions

Broad River: Floyds Creek, located south of Henson's Road and 0.6 mile west of its junction with the Railroad. This is a sub EO of Parent EO 247. Floyds Creek tributary south of Hensons Road on the north facing slopes of the tributary to Floyds Creek, south of the road (Padgett 2013).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City	5		
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 8209 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11125

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30491	2001; Padgett	Broad River: Floyds	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2002

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2002-04-21

Last Observation Date 2002-04-21 **First Observation Date** 2001-04-06

EO Data 2002: Site unchanged from previous visit (Padgett 2002).
2001: Less than 150 clumps including single and double leaves seen, seedlings present, in flower on 6 April (Padgett 2001).

Element Occurrence Report

EO ID 8209 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11125

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments J E Padgett collected flower and leaf materials for graduate research (2001)

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO <150 clumps (Padgett 2001, 2002).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-06

EO Rank Comments EO rank is based on EO Rank Specs for this species and most recent EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

General Description Small strip of woods between the creek and a powerline Right-of-Way Other species present inlcude Hepatica americana and Polystichum acrostichoides (Padgett 2001).

Min. Elevation		**feet**		**meters**
Max. Elevation	760.00	**feet**	232.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics Site may be impacted by bridge replacement (Padgett 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 8209 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 11125

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description
HERB.BOON 15990, J E PADGETT APRIL 06, 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/22/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	10/8/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/8/2001 12:00:00AM
Digital Mapping By	BLW	**Digital Mapping Date**	12/8/2005 1:38:57PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
ACREAGE	2.094607
WATERSHED	194 - 03050105
MAPSHEET	40118 - 35081-C8
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	
COUNTY	1897 - NCRUTH
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_ZONE	
LONGITUDE_DD	
HECTARES	0.847661
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_EASTING	
MAPSHEET	40119 - 35081-C7
HUC_12	030501050502

Record Maintenance

Record Create User	JLA	**Record Create Date**	10/8/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/22/2015 11:11:49PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 7387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10303

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 64 **Field Office Number**

ID Confirmed ? - Questionable

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
811	Beaverdam Creek Natural Area	N

Survey Site

Survey Site Name
First Broad River: Beaverdam Creek Natural Area

Directions

First Broad River: Beaverdam Creek Natural Area. Beaver Dam Creek, tributary north of SR 1148 near Flint Hill Church. BEAVERDAM CREEK NATURAL AREA: 2.6 AIR MILES SOUTHEAST OF BOILING SPRINGS, ON SOUTHWEST SIDE OF SHARP BEND IN BEAVERDAM CREEK, 0.6 MILE NORTHWEST OF JUNCTION OF FLINT HILL CHURCH RD.(SR 1148), CLAY RD. (SR 1218), AND BURKE RD. (SR 1148).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South	9		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province
PD

Mapping

Element Occurrence Report

EO ID 7387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10303

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is located within 2.0 kilometers of EO 297, but is not linked because this population has not been confirmed (Robinson 2015).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

OCCURRENCE IN NEED OF VERIFICATION, FLOWER SIZE SLIGHTLY LARGE, CALYX TUBE OPENING EXCEEDS 5MM IN WIDTH (OAKLEY 2002).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
7387	2002-06-11; Oakley	Beaverdam Creek N	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Surveyor
Oakley

Survey Date 2002-06-11

Last Observation Date 2002-06-11 **First Observation Date** 2002-06-11

EO Data ROUGH ESTIMATE OF UP TO 500 PLANTS IN FLOWER AND LEAF ON 11 JUNE 2002 (OAKLEY 2002).

Element Occurrence Report

EO ID 7387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10303

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 2002-06-11
EO Rank Comments Rank changed from a BC to a U-Unrankable based on the need for verification (Wichmann 2005). Based on rank specifications determined with USFWS.
EO Rank Specifications Version Used

Description

EO Type
General Description Primarily south-facing slopes, Mesic Mixed Hardwood Forest and Kalmia bluff (Oakley 2002).
Min. Elevation 660.00 **feet** 201.00 **meters**
Max. Elevation 700.00 **feet** 213.00 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	MYRTLE LEDBETTER	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments Occurrence in need of verification, flower size slightly large, calyx tube opening exceeds 5mm in width (Oakley 2002).
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N
References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Element Occurrence Report

EO ID 7387 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10303

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/17/2015 12:00:00AM
Transcribed By	SCO	**Transcription Date**	1/27/2003 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
PHYSIOGRAPHIC_PROVINCE	2 - PD
Site_Code	811
SITE	811.000000 - S.USNCHP*2241
HUC_12	030501050704
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	7.7134163789
Hectares	3.12151367997
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6

Record Maintenance

Record Create User	SCO	**Record Create Date**	1/27/2003 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	11/25/2015 1:58:06PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 7324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10240

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 37 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Hunter Road (Sub EO of EO 099)
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: unnamed tributary south of the Broad River and east of Hunter Road. This is a sub EO of 099 (Wichmann 2005). 0.5 mile south of the Broad River, between road cut and back of trailer on the east side of Hunter Road (SR 1124).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	7		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 7324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10240

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68508	Padgett 2012	Broad River/Hunter	Polygon	Delimited				2010 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1994, 2005

Surveyor

Survevor
Gill Newberry
James Padgett, NHP
Maxwell Feldman, NHP intern

Element Occurrence Report

EO ID 7324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10240

Survey Date 2005
Last Observation Date 2005 **First Observation Date** 1994-06
EO Data This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed.
2015: Padgett and Feldman counted 3011 plants on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres of EO 99 (Padgett and Feldman 2015).
2005: Site visited and remapped. Counts estimates for the site have the population at around 230-250 plants (Padgett). Estimated between 100-150 plants seen on April 12, 2005 (Padgett 2005).
1996: 150 plants estimated by Newberry in 1995 or 1996 [year not reported] (Newberry 1996).
1994: About 150 plants seen in June 1994 (Newberry 1994).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments J. E. Padgett collected flower and leaf materials from this site in 2001 for graduate research at ASU.

EO Rank

EO Rank Factor Survey Data

Condition of EO Fair condition.
Condition Rating
Size of EO Mapped at 0.43 acres. Count estimates from 2015 put the population between 230-250 plants (Padgett). -- Between 100-150 plants (Padgett 2005). About 150 plants seen (Newberry 1994).
Landscape Context Poor overall landscape context with a cabin now along the stream near the population and a lake below the site (Padgett).

EO Rank C - Fair estimated viability **EO Origin Subrank**
EO Rank Date 2015-05-19
EO Rank Comments EO rank based on EO rank specs for this species (Wichmann 2005).
EO Rank Specifications Version Used

Description

EO Type
General Description Dry-Mesic Oak-Hickory Forest community located on a gently sloping porton of a small unnamed stream near pastures. Dominate canopy speices include Quercus alba, Quercis coccinea, Quercis falcata, Loiriodendron tulipifera. The understory is comprised of Cornus flordia, Oxydendrum arboreum, and Acer rubrum. Shrubs include Kalmia latifolia, Euoynmous americanus, Vaccinium arboreum and Vaccinium pallidum. Vines such as Vitis rotundifolia, Toxicodendron radicans Lonicera japonica, and Smilax glauca are present. Herbs include Hexastylis naniflora, Goodyeara pubescens, Elephantopus tomentosa, Chimaphila maculata, and Mitchella repens (Padgett 2005). Laurel thicket above small stream in Broad River drainage (Newberry 1994).

Min. Elevation	754.00	**feet**	230.00	**meters**
Max. Elevation	771.00	**feet**	235.00	**meters**
Observed Area	0.43	**acres**	0.17	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments

Element Occurrence Report

EO ID 7324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10240

Ownership

Owner Type	Owner Name	Owner Note
Private individual	TOM LAUGHRIDE, 1285 HUNTER ROAD, FOREST CITY	not in latest parcel layer (2015)
Private individual	Christopher Jolley, 398 W V Thompson Rd, Rutherfordton, N	2012 request for permission, did not respond
Private individual	James and Wanda Dobbins, 142 Jim Dobbins Rd, Rutherfordt	2012 request for permission, did not respond

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/18/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	3/18/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	2/26/1998 12:00:00AM
Digital Mapping By	KAI	**Digital Mapping Date**	6/11/2013 3:21:28PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 7324 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10240

Spatial Attributes

Attribute Name	Attribute Value
LATITUDE_DD	[redacted]
HUC_12	030501050501
ACREAGE	0.426704
UTM_NORTHING	[redacted]
LONGITUDE_DMS	[redacted]
HECTARES	0.172682
MAPSHEET	40482 - 35081-B8
LONGITUDE_DD	[redacted]
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
UTM_ZONE	[redacted]
UTM_EASTING	[redacted]
LATITUDE_DMS	[redacted]
WATERSHED	194 - 03050105
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	JLA	**Record Create Date**	3/18/1998 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	3/18/2016 6:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 7166 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10082

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 2 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20291 **Parent EO Shape ID** 48,337.00 **Parent EO Number** 98

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

South Fork Catawba River: Indian Creek, Reeps Grove Church (Sub EO of EO 098).

Directions

Indian Creek: Reeps Grove Church. This is a Sub EO of Parent 098 (Wichmann 2005). 1.2 miles west of Cat Square (Bell 1957). This site has evidently been destroyed. See Additional Topics for more discussion.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 7166 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10082

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

Extirpated

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
7166	1980; Gaddy	1.2 miles west of C	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1980, 2001

Surveyor

Survevor
L.L. Gaddy
James Padgett, ASU

Element Occurrence Report

EO ID 7166 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10082

Survey Date 2001
Last Observation Date 1957-04-28 **First Observation Date** 1957-04-28
EO Data 2001: Searched for site in 2001, but was unable to locate (Padgett 2005).
1981: Gaddy was unable to locate site in 1981 (Gaddy 1981).
1980: Searched for in 1980: Site evidently destroyed (Gaddy 1980).
1957: Herbarium collection (Bell 1957).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank X - Extirpated **EO Origin Subrank**

EO Rank Date 1980
EO Rank Comments Site has evidently been destroyed (1980).

EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	**feet**	**meters**
Max. Elevation	**feet**	**meters**
Observed Area	**acres**	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** N - No **TNC involvement**
Protection Comments Extirpated.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments A 1957 herbarium specimen from Bell (NCU 176117) states it was collected from a location 1.2 miles west of Cat's Square. Gaddy (1981) was unable to find the species at this location in 1980 and 1981, and regarded it as possibly extirpated. Gaddy did re-locate the species 0.4 miles west of Cat Square (the presumed location of NCU 176118, mapped as NCHP sub EO 003). [C. Wells, 2006].

Additonal Topics

Element Occurrence Report

EO ID 7166 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10082

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U80GAD01NCUS	Gaddy, L. L. 1980. Status Report on Hexastylis naniflora Blomquist. Report prepared under contract with the U.S. Fish and Wildlife Service, Endangered Species office Region 4, Richard Russell Federal Building, 75 Spring Street, Atlanta, GA 30303	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

HERB.NCU 176117, C.R.BELL 6612, 28 APRIL 1957.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/9/2015 12:00:00AM

Transcribed By ASW **Transcription Date** 9/2/1987 12:00:00AM

Manual File Note

Mapping

Paper Mapping By ASW **Paper Mapping Date** 9/2/1987 12:00:00AM

Digital Mapping By admin **Digital Mapping Date** 5/18/2004 12:00:00AM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Not Reviewed **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39390 - 35081-E4
WATERSHED	191 - 03050102
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
ACREAGE	7.71
HUC_12	030501020501
COUNTY	1871 - NCLINC

Record Maintenance

Element Occurrence Report

EO ID 7166 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 10082

Record Create User	ASW	**Record Create Date**	9/2/1987 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 6780 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9696

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 72 **Field Office Number**

ID Confirmed ? - Questionable

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22234 **Parent EO Shape ID** 61,473.00 **Parent EO Number** 211

Site/Directions

Sites

Site ID	Name	Auto-calculated
1013	First Broad Hop-Hornbeam Natural Area	N

Survey Site

Survey Site Name
First Broad River: First Broad Hop-Hornbean Natural Area (Sub EO of EO 211)

Directions

First Broad River: First Broad Hop-Hornbeam Natural Area: This is a sub EO of Parent EO 211 (Wichmann 2005). Approximately 2 air miles north of Shelby, on the east side of a bend in the First Broad River, ca. 0.4 air mile west and southwest of the junction of Lafayette St.(SR 1005) and Blackwood Rd.(SR 1840).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby	5		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province
PD

Mapping

Element Occurrence Report

EO ID 6780 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9696

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
6780	2002; NCNHP	First Broad Hop-Hc	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Survevor
Oakley

Survey Date 2002-04-26

Last Observation Date 2002-04-26 **First Observation Date** 2002-04-26

EO Data 2002: Estimate of less than 100 plants on 26 April (Oakley 2002).

Element Occurrence Report

EO ID 6780 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9696

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Estimate of less than 100 plants on 26 April (Oakley 2002).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2002-04-26
EO Rank Comments Based on rank specifications determined with USFWS.

EO Rank Specifications Version Used

Description

EO Type
General Description Slight slopes with young-mature, mesic hardwoods and Kalmia, with FAgus, Liriodendron, Quercus rubra, Ostrya, Rhododendron maximum and R. minus, Polystichum, Hexastylis arifolia (Oakley 2002).

Min. Elevation	760.00	**feet**	232.00	**meters**
Max. Elevation	760.00	**feet**	232.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	BARB & EMILE GEBEL	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Element Occurrence Report

EO ID 6780 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9696

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/15/2015 12:00:00AM
Transcribed By	SCO	**Transcription Date**	1/27/2003 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	40121 - 35081-C5
WATERSHED	194 - 03050105
PHYSIOGRAPHIC_PROVINCE	2 - PD
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
ACREAGE	7.71
Site_Code	1013
SITE	1013.000000 - S.USNCHP*2240
HUC_12	030501050702
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	SCO	**Record Create Date**	1/28/2003 12:00:00AM
Last Modified By	JLA	**Last Modified Date**	10/27/2015 9:45:45AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 6668 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9584

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 13 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22415 **Parent EO Shape ID** 63,452.00 **Parent EO Number** 247

Site/Directions

Sites

Site ID	Name	Auto-calculated
1117	Sandy Mush Outcrop	N

Survey Site

Survey Site Name

Broad River: Floyds Creek near Harris, Sandy Mush Rock Outcrop (sub EO of 247)

Directions

Broad River: Floyds Creek near Harris, Sandy Mush Rock Outcrop: This is a sub EO of Parent EO 247 (Wichmann 2005). Located about 0.2 mile north of SR 2149, about 0.6 mile west of its junction with SR 2210, south of Sandy Mush Community.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 6668 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9584

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Plants are scattered in several small areas along the streams (Padgett 2001).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Plants may occur along the streams, outside of the presently known EO locality (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28924	2005; NCNHP	Broad River: Floyds	Polygon	Delimited				1998 aerial photos
28925	2005; NCNHP	Broad River: Floyds	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	

Surveyor

Surveyor
Gaddy
James Padgett, NHP
Jay Kranyik
Gill Newberry

Element Occurrence Report

EO ID 6668 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9584

Survey Date 2005-05
Last Observation Date 2005-05 **First Observation Date** 1977
EO Data 2005: Less than 100 plants seen along two small unnamed streams; less than 50 plants seen along one of the streams, recent ATV use in the area has trampled some plants (Padgett 2005). Fewer than 50 plants seen (Padgett 2001).
2000: Partial survey, area not throughly seached; 4 clumps observed by Kranyik on 25 March 2000 (Kranyik 2000).
1995: 75-100 plants estimated by Newberry in 1995 (Newberry 1996).
1981: 50-75 plants found in boggy areas along small stream and on slopes along eastern margin of outcrop; seed production excellent; good population of seedlings present (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments James Padgett collected flower and leaf material collected in 2001 for pollen grain and genetic analysis (Padgett 2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO Portions of the EO has evidence of trampling by ATV use (Padgett 2005).
Condition Rating
Size of EO < 50 plants (Padgett 2005).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2005-05
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Creekhead and small streams with Quercus alba, Acer rubrum, Liriodendron tulipifera, Vaccinium spp., Rhododendron, and Ceonanthus (Padgett 2005). Boggy creekhead, Quercus alba, Acer rubrum, Liriodendron, Vaccinium elliottii, Rhododendron nudiflorum, Osmunda cinnamomea.

Min. Elevation	840.00	**feet**	256.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	WILLIAM S. WOMACK	
Private individual	Rob Chapman	Proposed Rock Quarry (Padgett 2005).

Owner Comments Rob Chapman has worked with several aggregate companies to quarry the site if permits can be obtained (Padgett 2005).

Element Occurrence Report

EO ID 6668 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9584

OwnerInfo_BCD Y

Additional Topics

General Comments Most plants in association with Osmunda cinnamomea.

Additonal Topics

Topic Keywords

Keywords
IMPACTS

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F00CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description
HERB.UNCC 13134, MATTHEWS, MELLICHAMP, HOOD, HICKS, 6 JUNE 1977.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/22/2015 12:00:00AM

Transcribed By **Transcription Date** 1/1/1982 12:00:00AM

Manual File Note

Mapping

Paper Mapping By - **Paper Mapping Date** 1/1/1982 12:00:00AM

Digital Mapping By JLA **Digital Mapping Date** 10/6/2015 1:31:30PM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 6668 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9584

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	1117
SITE	2493.000000 - S.USNCHP*4588
SITE	1117.000000 - S.USNCHP*627
Site_Code	65945
HUC_12	030501050502
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.46664037915
Hectares	0.593529220027
WATERSHED	194 - 03050105
MAPSHEET	40119 - 35081-C7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/8/1987 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/22/2015 11:11:50PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 6412 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9328

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 45 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22285 **Parent EO Shape ID** 61,991.00 **Parent EO Number** 226

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Catawba River: Lake James, near SR 1223 Bridge (sub EO of EO 226).
NCDOT 1998 bridge replacement project

Directions

Catawba River: Lake James, near SR 1223 Bridge. This is a Sub EO of Parent EO 226 (Wichmann 2005). On the north side of SR 1223 near bridge H46 on a south-facing slope over the Linville river, 0.4 mile south of Lake James.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F7	Glen Alpine	5		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050101 - Upper Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 6412 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9328

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30196	2005; NCNHP	Catawba River: Lak	Point	Estimated	25.00	Meters		1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1998, 2005

Surveyor

Survevor
Tim Savidge, NCDOT
Misty Franklin, NHP
Brenda Wichmann, NHP

Element Occurrence Report

EO ID 6412 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9328

Survey Date 2005-05
Last Observation Date 2005-05 **First Observation Date** 1998-05-18
EO Data 2005: Approximately 11 very small clumps, 1 flowering (Franklin and Wichmann 2005).
1998: Between 51 and 100 plants estimated sparsely spaced in a 10-100 square-meter area (Savidge 1998).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Approximately 11 very small clumps, 1 flowering (Franklin and Wichmann 2005).
Landscape Context Steep rocky, south-facing slope above the Linville River below Lake James (Savidge 1998).

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2005-05
EO Rank Comments EO rank is based on EO Rank Specs for this species and most recent EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description Steep rocky, south-facing slope above the Linville River below Lake James (Savidge 1998).
Min. Elevation 1,080.00 **feet** 329.00 **meters**
Max. Elevation 1,120.00 **feet** 341.00 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments Bridge replacement should not impact these plants, they are well outside the Right of Way (1998).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments Owner Name 1:CRESCENT RESOURCES INC
Owner Name 2:
Owner Address:P O BOX 1003
Owner City:CHARLOTTE
Owner State:NC
Zip:28201
Parcel Address:5596 POWERHOUSE RD
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics Bridge replacement appears to have impacted this population, few plants seen in 2005; construction was underway at time of visit, plants were not marked; bottom portion of the south facing slope impacted by construction and temporary fencing (Franklin and Wichmann 2005). Bridge replacement should not impact these plants, they are well outside the Right of Way (1998).

Element Occurrence Report

EO ID 6412 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9328

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F98CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description
HERB-NCDOT, T. SAVIDGE 18 MAY 1998.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/21/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	8/5/1998 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	8/4/1998 12:00:00AM
Digital Mapping By	BLW	**Digital Mapping Date**	11/8/2005 2:30:07PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39020 - 35081-F7
WATERSHED	190 - 03050101
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
HECTARES	0.195354
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
COUNTY	1828 - NCBURK
ACREAGE	0.482729
HUC_12	030501010607

Record Maintenance

Element Occurrence Report

EO ID 6412 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9328

Record Create User	JLA	**Record Create Date**	8/5/1998 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:11:18PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 6228 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9144

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 18 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20290 **Parent EO Shape ID** 48,332.00 **Parent EO Number** 97

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Sandy Run Creek, SW of SR 1164 (Sub EO of EO 097)

Directions

Broad River: Sandy Run Creek, south west of SR 1164. This is a sub EO of Parent EO 097 (Wichmann 2005). On the southeast side of Sandy Run Creek about 1.5 miles northwest of Boiling Springs, on the southwest side of SR 1164 (Murrell & Kelly 1993). Also located on the next bluff south (second bluff south of SR-1164), on east side of Sandy Run Creek (Newberry 1996) [See Additional Topics for further discussion on this second site].

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C6	Boiling Springs North	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 6228 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9144

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Remapped areas along creek at the location of the second bluff to reflect the actual location of this occurence on the ground (Padgett 2014). - All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30489	2001; NCNHP	Broad River: Sandy	Polygon	Delimited				1998 aerial photos
49061	1996; Newberry	Broad River: Sandy	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	1993, 2001

Element Occurrence Report

EO ID 6228 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9144

Surveyor

Surveyor

Murrell
Kelly
James Padgett, ASU
Gill Newberry

Survey Date 2001-04-03

Last Observation Date 2001-04-03 **First Observation Date** 1993-04-04

EO Data First bluff south of SR-1164: Less than 50 plants on a steep north facing slope along the creek (Padgett 2001). 50-100 clumps estimated, growing on a very steep north- and northwest-facing bluff (Murrell & Kelly 1993)
Second bluff south of SR-1164: 50-100 plants observed by Newberry in 1995/1996 [year not reported](Newberry 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments J E Padgett collected flower and leaf materials in 2001 for research.

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO Less than 50 plants observed along steep creek bluff (Padgett 2001). 50-100 clumps (Murrell & Kelly 1993).

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-03

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Steep Heath Bluff with Kalmia latifolia, Galax ucreolata, and Polystichium acrostichoides present (Padgett 2001). -Very steep bluff with rock outcrops. Plant community is Piedmont/Coastal Plain Heath Bluff or Mesic Mixed Hardwood Forest. Other species include Kalmia latifolia, Symplocos tinctoria, Fagus, Amelanchier arborea, Galax aphylla, Oxydendrum, Cornus florida, Heuchera americana, Carpinus, Thalictrum Thalictroides, Polystichum, Mitchella repens, Leucothoe axillaris, Arisostichus capreolata, Gelsemium sempervirens, Quercus sp., Antennaria solitaria, Hepatica americana (Murrell & Kelly 1993).

Min. Elevation	720.00	**feet**	219.00	**meters**
Max. Elevation	780.00	**feet**	238.00	**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No

Element Occurrence Report

EO ID 6228 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9144

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	Private	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments Newberry (1996) reports the exact same locality information as Murrell and Kelly (1993) and notes they discovered the occurrence in 1993 but she maps the occurrence one bluff south of where Murrell and Kelly (1993) show it on their map. Strangely, the coordinate Newberry (1996) reports ([redacted]) falls within the Murrell and Kelly (1993) site; however, the source of this coordinate is not reported - unclear if Newberry generated it during her survey. Padgett confirmed he located plants at the Murrell and Kelly (1993) site in 2002 and that its location has been correctly digitized (pers. comm. to S. Mason, 22 April 2009). Padgett will visit the location Newberry indicated on her map to survey for plants; for now both locations are mapped in the NHP database under this EO (Mason 2009).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries Y - Yes **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
F93NHP01NCUS	NCNHP Staff, 1993 Field Survey	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 10/8/2015 12:00:00AM

Transcribed By **Transcription Date** 5/5/1993 12:00:00AM

Manual File Note

Mapping

Paper Mapping By AWK **Paper Mapping Date** 5/5/1993 12:00:00AM

Digital Mapping By JEP **Digital Mapping Date** 9/26/2014 3:01:34PM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Element Occurrence Report

EO ID 6228 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9144

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
HUC_12	030501050505
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.94317795582
Hectares	1.19106369997
WATERSHED	194 - 03050105
MAPSHEET	40120 - 35081-C6

Record Maintenance

Record Create User AWK **Record Create Date** 5/5/1993 12:00:00AM

Last Modified By JTF **Last Modified Date** 11/18/2015 11:12:27PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 6117 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9033

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 11 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork, Pleasant Grove

Directions

South Fork Catawba River: Henry Fork, tributary near Pleasant Grove. Approximately 4000 feet northwest of Pleasant Grove along a cool, well-drained, north-facing slope in the right-of-way on the south side of SR-1924 (Old NC-18).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F5	Valdese			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 6117 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9033

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Extirpated

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Extirpated

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49030	1981; Gaddy	Pleasant Grove	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981, 1995

Surveyor

Survevor
L.L. Gaddy
Gill Newberry

Survey Date 1995

Last Observation Date 1981-05 **First Observation Date** 1981-05

Element Occurrence Report

EO ID 6117 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9033

EO Data New house trailer in ravine; no plants could be located by Newberry in 1995 (Newberry 1996). ABOUT 10 PLANTS IN A SMALL UNDISTURBED AREA ALONG RIGHT-OF-WAY; NOT A HIGH-QUALITY SITE (GADDY 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank X - Extirpated **EO Origin Subrank**

EO Rank Date 1995
EO Rank Comments Site of house trailer; extirpated (Gillian Newberry 1995).

EO Rank Specifications Version Used

Description

EO Type
General Description Shallow ravine, an island of mature trees surrounded by disturbed areas; canopy of Tsuga canadensis, Pinus strobus, Liriodendron, with Rhododendron maxiumum.

Min. Elevation	1,300.00	**feet**	396.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** Y - Yes
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 6117 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9033

References

Reference Code	Full Citation	EO Reference Primary
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/17/2015 12:00:00AM
Transcribed By	-	**Transcription Date**	1/1/1982 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	-	**Paper Mapping Date**	1/1/1982 12:00:00AM
Digital Mapping By	SCM	**Digital Mapping Date**	4/28/2009 1:16:50PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	1062
SITE	1062.000000 - S.USNCHP*2085
WATERSHED	191 - 03050102
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	
UTM_ZONE	
HECTARES	0.484314
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
ACREAGE	1.196761
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	
LONGITUDE_DMS	
MAPSHEET	39022 - 35081-F5
HUC_12	030501020101
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 6117 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 9033

Record Create User	ASW	**Record Create Date**	9/8/1987 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	11/17/2015 10:34:40AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 5682 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8598

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 16 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 21645 **Parent EO Shape ID** 58,421.00 **Parent EO Number** 177

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Floyds Creek, Long Branch (Sub EO of EO 177)
NCDOT Transplant location
USFWS Flex Fund Monitoring Site 9 (in part)

Directions

Broad River: Floyds Creek, Long Branch/US 221, ravine northeast of US 221, along a tributary located 0.4 mile north of where US 221 crosses over Long Branch. This is a sub EO of parent EO 177 (Wichmann 2005). Near Danieltown: In boggy area just east of US 221, 1.4 miles north of Danieltown. Population apparently destroyed by highway construction.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C8	Rutherfordton South			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 5682 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8598

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located near EO 164 but separated by US 221; All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68202	Padgett 2012	Long Branch, south	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1977, 1987, 2001, 2012

Surveyor

Survevor
James Padgett, ASU, NHP
Fridell
Masburg

Element Occurrence Report

EO ID 5682 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8598

Survey Date 2014-05-20
Last Observation Date 2014-05-20 **First Observation Date** 1977
EO Data 2014: Padgett counted 246 plants within monitoring plots and estimated 5340 plants covering 5.21 acres of mapped area on 20 May 2014 (NCDOT 2015)
2012: Failed to find by Padgett during 2012 status surveys (Padgett 2012).
2004: Plants relocated near near original occurence along same stream corridor by NCDOT in 2004. Estimated population of 100-200 plants (Padgett 2014 - from personal site visit with NC DOT in 2004). --)No plants found, also searched nearby streams (Padgett 2001).
1987: Population apparently destroyed by highway construction (Mansberg & Fridell 1987).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO .79 acres
Landscape Context

EO Rank E - Verified extant (viability not assessed) **EO Origin Subrank**
EO Rank Date 2012
EO Rank Comments Found by Padgett in 2014
Failed to find in 2012.
EO rank based on rediscovery of plants near original site in 2004 by NC DOT
EO Rank Specifications Version Used

Description

EO Type
General Description

Min. Elevation	960.00	**feet**	292.61	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	0.79	**acres**	0.32	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Sue Sparks, Family Real Estate LLC	Permission request letter sent 2012, no response
State/provincial gove	NC DOT US74	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 5682 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8598

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
F87NHP01NCUS	NHP Staff. 1987. Field Survey.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
F15DOT04NCUS	N.C. Department of Transportation Division 13. 2015. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2015.Compiled by C. Gregory.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Robinson **Version Date** 4/20/2016 12:00:00AM
Transcribed By **Transcription Date** 9/2/1987 12:00:00AM
Manual File Note

Mapping

Paper Mapping By ASW **Paper Mapping Date** 9/2/1987 12:00:00AM
Digital Mapping By KAI **Digital Mapping Date** 6/11/2013 1:31:01PM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 5682 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8598

Spatial Attributes

Attribute Name	Attribute Value
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
ACREAGE	0.79654
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	0.32235
HUC_12	030501050502
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	40118 - 35081-C8
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/2/1987 12:00:00AM
Last Modified By	MLW2	**Last Modified Date**	4/10/2017 3:56:30PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 5089 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8005

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 8 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

First Broad River: Knob Creek, Unnamed Tributary South of Zion Hill Church [Poundingmill Creek]
Poundingmill Creek (per Gaddy, 1981)

Directions

First Broad River: Knob Creek, unnamed tributary south of Zion Hill church and east of SR 1552. Creekhead along east side of SR 1552, about 0.5 mile south of junction with SR 1555.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 5089 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8005

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

Digitized using shapefiles received in May 2005 from Padgett (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is located more than 2.0 kilometers from EOs: 005, 006, and 180 (Wichmann 2005). SITE IS LESS THAN 1.5 MILES FROM OTHER H. NANIFLORA LOCALITIES (005, 006, 007 [=EO 180]).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28478	2002; Padgett	First Broad River: H	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981,1989, 2001, 2002

Surveyor

Survevor
L.L. Gaddy
Harry LeGrand, NCNHP
Padgett, ASU
Gill Newberry

Element Occurrence Report

EO ID 5089 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8005

Survey Date 2002
Last Observation Date 2002 **First Observation Date** 1981-05
EO Data Padgett observed less than 20 plants scattered down slope to creek; few flowers, no seedlings seen during spring of 2001 and 2002 (Padgett 2005). Newberry observed 200-300 plants in ravine on east side of SR-1552 in 1996, just south of old home site. There was much trash in the upper portion of the population (Newberry 1996). LeGrand reported in 1989 that the site is still wooded (LeGrand 1989). LESS THAN 10 CLUMPS PRESENT OVER 16 SQM OBSERVED BY GADDY IN MAY 1981; NO SEED PRODUCTION NOTED; NO SEEDLINGS OF ANY AGE SEEN; FLOWERS AT THIS SITE WERE EXCEPTIONALLY SMALL (GADDY 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments Leaf and flower materials collected in 2001 and 2002 for research by J. E. Padgett, Appalachian State University (Padgett 2005).

EO Rank

EO Rank Factor Survey Data

Condition of EO Few flowers, no seedlings (Padgett 2002). NO SEED PRODUCTION NOTED; NO SEEDLINGS OF ANY AGE SEEN; FLOWERS AT THIS SITE WERE EXCEPTIONALLY SMALL (GADDY 1981).
Condition Rating
Size of EO Less than 20 (Padgett 2002). LESS THAN 10 CLUMPS PRESENT (GADDY 1981).
Landscape Context SITE STILL WOODED IN 1989 (LEGRAND 1989).

EO Rank D - Poor estimated viability **EO Origin Subrank**
EO Rank Date 2000
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Wooded slope leading to a small unnamed tributary of Knob Creek (Padgett 2005). CREEKHEAD WITH MATURE CANOPY OF ACER RUBRUM, LIRIODENDRON, NYSSA SYLVATICA.

Min. Elevation	1,140.00	**feet**	347.00	**meters**
Max. Elevation	1,210.00	**feet**	368.81	**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments

Element Occurrence Report

EO ID 5089 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8005

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
F02CON01NCUS	Contributed. Personal communications contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/15/2015 12:00:00AM
Transcribed By	-	**Transcription Date**	1/1/1982 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	-	**Paper Mapping Date**	1/1/1982 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:10:27PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050605
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	4.69185995424
Hectares	1.89873129004
WATERSHED	194 - 03050105
MAPSHEET	39389 - 35081-E5
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 5089 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 8005

Record Create User	ASW	**Record Create Date**	9/8/1987 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	10/15/2015 11:20:37AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 4709 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7625

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 60 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20291 **Parent EO Shape ID** 48,337.00 **Parent EO Number** 98

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
South Fork Catawba River: Hulls Crossroads (Sub EO of EO 098)
NC DOT TIP: B-2119

Directions

South Fork Catawba River: Hulls Crossroads. Indian Creek, Little Indian Creek, unnamed tributary at Hulls Crossroads. This is a sub EO of Parent EO 098 (Wichmann 2005). Near bridge on SR 1111 (Hulls Crossroads) Over tributary of Little Indian Creek, 1.7 miles from intersection with Highway 127.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak	5		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 4709 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7625

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
4709	2001; Padgett	South Fork Catawb	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2012-03-16

Last Observation Date 2012-03-16 **First Observation Date** 2001-04-06

Element Occurrence Report

EO ID 4709 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7625

EO Data 2012: Wagner et. al. counted 20-50 plants on 16 March 2012. Plants budding but not in full bloom (Wagner 2012).
2001: 100-200 clumps consisting of single or double leaves occuring for 400 feet along the slope for some 200 feet up the slope; with flowers on 6 April (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO With flowers on 6 April (Padgett 2001)

Condition Rating

Size of EO 100-200 clumps (Padgett 2001)

Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-06

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic hardwood community on sandy loam soil with Pinus virginiana at the top of the slope. Associated species include Hepatica americana, Ilex opaca, Quercus sp, Cornus florida, Rubus sp, Fagus grandifolia, Polystichum acrostichoides (Padgett 2001).

Min. Elevation		**feet**		**meters**
Max. Elevation	1,000.00	**feet**	305.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Private	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

Element Occurrence Report

EO ID 4709 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7625

Topic Keywords

Keywords

HEXASTYLIS NANIFLORA
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	Y
U05HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NCDOT). 2005. Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N

Specimen

Specimen Description

HERB.BOON 15991, J E PADGETT APRIL 06, 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	12/17/2002 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 4709 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7625

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39390 - 35081-E4
WATERSHED	191 - 03050102
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
HECTARES	3.125667
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
ACREAGE	7.71
HUC_12	030501020501
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	JLA	**Record Create Date**	12/17/2002 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	11/18/2015 11:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 4708 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7624

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 59 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
3042	Third Creek Rare Plant Site	N

Survey Site

Survey Site Name
Hunter Bridge Road
Third Creek Rare Plant Site

Directions

South Yadkin River, Third Creek: Three locations in the vicinity of Third Creek, 1.5 miles east of Taylorsville: Site 1 occurs along Third Creek off Hunter Bridge Road (SR-1628) (Padgett); Site 2 occurs south along US Highway 64 along a predominantly south flowing unnamed tributary of Third Creek; and Site 3 occurs north along US Highway 64 along a predominantly south flowing unnamed tributary of Third Creek (Padgett 2010).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Alexander (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-G1	Stony Point	1		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03040102 - South Yadkin

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 4708 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7624

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Mapped using GPS data points (Padgett 2010)

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All source features are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Additional occurrences may exist within 2.2 km of this location along small streams with wooded north-facing slopes (Padgett 2010).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
54010	2010; NCNHP	Site 1, South of US-	Polygon	Delimited				1:24,000 topos (di
54013	2010; NCNHP	Site 2, UT of Third	Polygon	Delimited				1:24,000 topos (di
54014	2010; NCNHP	Site 3, North of US-	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002, 2005, 2010
Quantitative ground survey	2005 (in part)

Element Occurrence Report

EO ID 4708 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7624

Surveyor

Surveyor

James Padgett, NCNHP
Franklin
Wichmann
Emily Parisher, ASU

Survey Date 2010-03-21

Last Observation Date 2010-03-21 **First Observation Date** 2002-04-05

EO Data 2010: Site 1: Additional survey work along unnamed north to south flowing tributary of Third Creek found plants in flower on 3/21/2010 on both the north and south sides of U. S. highway 64. There is an estimated 30-50 plants on the south side of the highway and 75-100 plants north of the highway (Padgett 2010).
2010: Site 2: 50-75 clumps found in hardwoods on wooded slopes along unnamed tributary of Third Creek. In flower on March 21, 2010 (Padgett 2010).
2010: Site 3: 50-75 clumps found in hardwoods on wooded slopes along unnamed tributary of Third Creek. In flower on 3-21-2010 (Padgett 2010).
2005: Site 1: 78 plants counted: 11 flowering, 5 vegetative, plant occur mostly on the slope, not much on ridge by creek (Franklin and Wichmann 2005).
2002: Site 1: 100-200 plants seen along small stream and along ridge on 10 October (Padgett 2002). 50-75 plants occurring along the ridge for 300 feet. flowering sparsely on 5 April (Padgett 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments J. E. Padgett conducted NCVS on site on 10-2-2002 (Padgett 2005).
Much of the occurrence located along US Highway 64 resides within the NCDOT road right-of-way (Padgett 2010).

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO Fair overall condition.

Condition Rating

Size of EO Less than 200 plants estimated (Padgett 2010) -- 78 counted (2005), 100-200 (2002).

Landscape Context Mixed hardwoods over sandy loam soil to disturbed community with Ligustrum (Padgett 2002).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2010-03-21

EO Rank Comments C-rank given due to its regional location (only known Yadkin River Basin site) within the known populations, as well as additional plants located within this site (Padgett 2010) -- This site might requre a higher site ranking. It is the only site in Alexander County and the only site in the Yadkin River Drainage to date (Padgett 2005). Sites 2 and 3 are CD ranked (Padgett 2010).

EO Rank Specifications Version Used

Description

EO Type

General Description Mixed hardwoods over sandy loam soil to disturbed community with Ligustrum. Associated species include Quercus alba, Ligustrum, Thalictrum thalictroides, Ilex opaca, Hepatica americana. There is a fence going through the area and past disturbance may be due to past cattle presence (Padgett 2002).

Min. Elevation		**feet**		**meters**
Max. Elevation	400.00	**feet**	122.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

Element Occurrence Report

EO ID 4708 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7624

More Land Y - Yes **More Protection** Y - Yes **TNC involvement** N - No

Protection Comments Part of the population lie within the NCDOT roadway corridor for U. S. Highway 64.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Hunter	
State/provincial gove	NCDOT	

Owner Comments

OwnerInfo_BCD Y

Additional Topics

General Comments Parent EO 290 and Sub EOs 288 and 289 were merged into this single record as all were closer than 1 km to one another (Amoroso 2015).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries Y - Yes **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
G12PAD01NCUS	Padgett, J. E. 2012. Alexander County Natural Areas Inventory. NC Natural Heritage Program, Raleigh, NC.	N
F10NHP01NCUS	NCNHP Staff, 2010 Field Survey	N
F02NCV01NCUS	North Carolina Vegetation Survey. 2002. Vegetation sample data.	N

Specimen

Specimen Description
HERB.BOON 16376, J E PADGETT APRIL 03, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/29/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	12/17/2002 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	
Digital Mapping By	JLA	**Digital Mapping Date**	10/29/2015 1:28:27PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Element Occurrence Report

EO ID 4708 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7624

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030401020301
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	2.01905569
Hectares	0.817084109994
WATERSHED	179 - 03040102
MAPSHEET	38660 - 35081-G1
COUNTY	1818 - NCALEX

Record Maintenance

Record Create User JLA **Record Create Date** 12/17/2002 12:00:00AM

Last Modified By JTF **Last Modified Date** 10/29/2015 11:11:40PM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 4172 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7088

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 62 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
Broad River: Richardson Creek, tributary about 0.9 mile up stream from its confluence with the Broad River (Sub EO of 099).

Directions

Broad River: Richardson Creek, unnamed tributary on the east side of the creek, approximately 0.9 stream mile north of its confluence with the Broad River. This is a Sub EO of Parent EO 099 (Wichmann 2005). Along the north-facing ridge of a tributary to Richardson Creek west of SR 1115, 0.5 mile south of Riverside Church.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	13		
35081-B7	Chesnee			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 4172 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7088

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68196	2012; Padgett	Richardson Creek, (	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2002-04-21

Last Observation Date 2002-04-21 **First Observation Date** 2002-02-02

Element Occurrence Report

EO ID 4172 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7088

EO Data 2002: Padgett observed 200-500 individual leaves or clumps occurring for 500 feet along the ridge on 21 April 2002 (Padgett 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments J.E. Padgett (ASU) is doing PCR and RAPD DNA work with Hexastylis naniflora (2001).

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 200-500 individual leaves or clumps occurring for 500 feet along the ridge (Padgett 2002).

Landscape Context Adjacent to cut-over, providing semi-open canopy (2002).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2002-02-02

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description North-facing ridge above tributary, cut-over to north providing semi-open canopy. Associated species inlcude Quercus alba, Fagus grandifolia, Pinus virginiana, Prunus serotina, Smilax glauca, Polystichum acrostichoides, Quercus phellos, Botrychium dissectum, Hepatica americana, Quercus rubra.

Min. Elevation	656.00	**feet**	200.00	**meters**
Max. Elevation	689.00	**feet**	210.01	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Corporation	DAN RIVER CORPORATION	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 4172 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7088

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description
HERB.BOON 16384, J E PADGETT APRIL 21, 2002

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/17/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	11/25/2002 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	11/19/2002 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 10:42:18AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.976363784114
Hectares	0.395121014999
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
MAPSHEET	40483 - 35081-B7
COUNTY	1897 - NCRUTH
SITE	2493.000000 - S.USNCHP*4588

Record Maintenance

Element Occurrence Report

EO ID 4172 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 7088

Record Create User	JLA	**Record Create Date**	11/25/2002 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	11/17/2015 1:03:11PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 4030 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6946

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 54 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22416 **Parent EO Shape ID** 63,462.00 **Parent EO Number** 248

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Broad River: McKinney Creek, Jebb Lamb Road Bridge (SR 1108) (Sub EO of EO 248).

Directions

Broad River: McKinney Creek, Jebb Lamb Road Bridge (SR 1108). This is a sub EO of Parent EO 248 (Wichmann 2005). Located along McKinney Creek in the southern part of Rutherford County about 1 mile south of the Broad River on the west side of SR 1108 near the bridge on Jebb Lamb Road (SR 1108) where it crosses over the creek. From the bridge the plants are upstream. (Padgett 2001).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	11		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 4030 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6946

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

This population may extend along the creek beyond the area surveyed in suitable habitat (Padgett 2005).

Multi-Jurisdictional

Multi-Jurisdictional **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28923	2001: Padgett	McKinney Creek, J	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001, 2005

Surveyor

Surveyor
James Padgett, ASU (2003), NHP (2005)

Survey Date 2005-04-12

Last Observation Date 2014-05 **First Observation Date** 2001-04-01

Element Occurrence Report

EO ID 4030 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6946

EO Data 2005: 20-30 plants estimated seen on April 12, 2005 (Padgett 2005).
2001: Fewer than 30 clumps seen in a 100 yard stretch along the north facing side of the creek; plants in leaf and flower on 1 April (Padgett 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO 20-30 plants estimated seen on April 12, 2005 (Padgett 2005).
Landscape Context

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-01
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Mesic hardwood community along creek bank which includes Quercus alba, Liriodendron tulipifera, Acer rubrum, Kalmia latifolia and Leucothoe axillaris, Heuchera americana. Area is fairly open due to a cutover on the north side of the creek (Padgett 2001).

Min. Elevation		**feet**		**meters**
Max. Elevation	220.00	**feet**	67.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Element Occurrence Report

EO ID 4030 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6946

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
F03CON02NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	10/2/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	10/8/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/5/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/2/2015 10:04:51AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	0.940798640972
Hectares	0.380728289987
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH
HUC_12	030501050501
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588

Record Maintenance

Element Occurrence Report

EO ID 4030 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6946

Record Create User	JLA	**Record Create Date**	10/8/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:10:37PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 3733 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6649

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 35 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20286 **Parent EO Shape ID** 48,311.00 **Parent EO Number** 93

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name
First Broad River: Brushy Creek, unnamed tributary south of SR 1123 (Sub EO of EO 093)

Directions

First Broad River: Brushy Creek, unnamed tributary south of SR 1123. This is a sub EO of Parent EO 093 (Wichmann 2005). About 0.3 miles west of First Broad River and west of Brushy Creek. near the sewer outfall right-of-way of Cleveland County.

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C5	Shelby	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 3733 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6649

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
3733	1997-06-04; Soil amear the sewer outfa		Point	Estimated	50.00	Meters		1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1997,2001

Surveyor

Survevor
Newberry
Huysman
James Padgett, ASU

Element Occurrence Report

EO ID 3733 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6649

Survey Date 2001-04-04
Last Observation Date 2001-04-04 **First Observation Date** 1997-06-04
EO Data Estimated less than 100 plants seen (Padgett 2001). Fewer than 100 plants on 4 June (Newberry & Huysman 1997).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO Less than 100 plants seen (Padgett 2001).
Landscape Context mixed hardwoods

EO Rank D - Poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-04
EO Rank Comments EO rank based on EO rank specs for this species and most current EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type
General Description mixed hardwoods
Min. Elevation 720.00 **feet** 219.00 **meters**
Max. Elevation 760.00 **feet** 232.00 **meters**
Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments near the sewer outfall right-of-way of Cleveland County.
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 3733 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6649

References

Reference Code	Full Citation	EO Reference Primary
U97DIC01NCUS	Dickson, W.K & Co and Soil and Environmental Consultants. 1997. Washburn switch variable grade sewer environmental assesment for Cleveland County, North Carolina.	N
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	9/9/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	9/11/1997 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	9/11/1997 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/9/2015 2:15:12PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement

Y Coordinate Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050701
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.92823069047
Hectares	0.780328479988
WATERSHED	194 - 03050105
MAPSHEET	40121 - 35081-C5
COUNTY	1839 - NCCLEV

Record Maintenance

Element Occurrence Report

EO ID 3733 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6649

Record Create User	JLA	**Record Create Date**	9/11/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/27/2015 11:09:07PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 3600 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6516

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 6 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20296 **Parent EO Shape ID** 48,390.00 **Parent EO Number** 101

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

South Fork Catawba River: Jacob Fork, Camp Creek North

Camp Creek North (per Gaddy, 1981)

Directions

South Fork Catawba River: Jacob Fork, Camp Creek North at SR 1163. This is a sub EO of principal EO 101 (Wichmann 2005). Camp Creek North, ravine along south side of SR 1924 About 2000 feet north of Camp Creek Community.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E5	Casar	2		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 3600 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6516

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49040	1981; Gaddy	Camp Creek North	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981, 1995

Surveyor

Survevor
L.L. Gaddy
Gillian Newberry

Element Occurrence Report

EO ID 3600 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6516

Survey Date 1995
Last Observation Date 1981-05 **First Observation Date** 1981-05
EO Data 1995: New home site observed in ravine by Newberry in 1995; no plants found. Whole area along Old NC-18 has many new home sites (Newberry 1995).
1981: About 200-300 plants in 40-100 square meter area; seed production average; population seemingly stable (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO
Condition Rating
Size of EO New home site; did not find (Gillian Newberry 1995).
Landscape Context

EO Rank X - Extirpated **EO Origin Subrank**
EO Rank Date 1995
EO Rank Comments
EO Rank Specifications Version Used

Description

EO Type
General Description Ravine near head of Camp Creek's northern branch. a well-drained site, sandy loam soils. canopy of Acer rubrum, Liriodendron, Quercus alba, young to middle-aged.

Min. Elevation	1,200.00	**feet**	366.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land N - No **More Protection** N - No **TNC involvement**
Protection Comments Extirpated

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management N - No
Management Comments
Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Element Occurrence Report

EO ID 3600 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6516

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP
Version Author Name Amoroso **Version Date** 10/14/2015 12:00:00AM
Transcribed By - **Transcription Date** 1/1/1982 12:00:00AM
Manual File Note

Mapping

Paper Mapping By - **Paper Mapping Date** 1/1/1982 12:00:00AM
Digital Mapping By SCM **Digital Mapping Date** 4/21/2009 9:42:47AM

Quality Control

Data QC Status Incomplete **Data QC By**
Map QC Status Incomplete **Map QC By**
Comments

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 2 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	31
SITE	31.000000 - S.USNCHP*143
WATERSHED	
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
ACREAGE	2.441817
HECTARES	0.988172
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39389 - 35081-E5
HUC_12	030501020201
COUNTY	1828 - NCBURK

Record Maintenance

Element Occurrence Report

EO ID 3600 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6516

Record Create User	ASW	**Record Create Date**	1/18/1989 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/14/2015 11:09:58PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 3553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6469

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 76 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2446	Big Horse Creek Rare Plant Site	N

Survey Site

Survey Site Name
Broad River: Big Horse Creek, Parris Tract (north) (Sub EO of EO 099).
USFWS Flex Fund Monitoring Site 2 (in part)

Directions

Broad River: Big Horse Creek, Parris Tract (north). This is a sub EO of parent EO 099 (Wichmann 2005). Two sub-occurrence [sub-occurrence B is now EO 172 (Wichmann 2005)] along unnamed tributaries to Big Horse Creek. The primary occurrence (A) occurs on the east [and west] side of US Highway 221 approximately 1.2 miles south of the Broad River. The secondary occurrence (B) [now EO 172 (Wichmann 2005)] is approximately 1.0 miles south of the Broad River (M. Franklin 2004). [(A)] along an unammed tributary to Big Horse Creek, approximately 2000' south of the intersection of US 221 and SR 1113 (Hick's Crossroad); east and west of US 221 (Renninger 2003). [(B) now EO 172]: east side of US 221 approximately 2000' north of the SC state line and approximately 3000' south of intersection of SR 1113 and US 221; along unnamed tributary to Big Horse Creek (Renninger 2003).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B7	Chesnee	6		2,

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 3553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6469

Physiographic Province

Physiographic Province

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

A GIS shape file was submitted with report of occurrence, which was used to digitize some source polygons that comprise the EO associated with this EO (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located approximately 0.1 mile north of sub EO 172; All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Less than 1.0 kilometer from the South Carolina border (Wichmann 2005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68193	Padgett 2012	Big Horse Creek Ra	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2003, 2004
Quantitative ground survey	2005

Element Occurrence Report

EO ID 3553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6469

Surveyor

Surveyor

Heather Renninger, H.W. Lochner
Emily Fentress, H.W. Lochner
Misty Franklin, NHP
James Padgett, NHP
Laura Gadd, NHP
Jackie Wagner, ASU
Maxwell Feldman, NHP intern

Survey Date 2015-05-19

Last Observation Date 2015-05-19 **First Observation Date** 2004-05-03

EO Data 2015: 3011 plants counted on 19 May 2015 in 2.29 acres of monitoring plots in sub EOs 37, 55, and 76. Estimated 32,000 total plants covering the entire 24.61 acres (Padgett and Feldman 2015).
2014: Padgett counted 3094 plants within monitoring plots for principal EO 99 on 19 and 20 May 2014 and estimated 33,300 plants covering 24.61 acres of mapped area (Padgett 2014).
2013: Site visited and population delineated on 14 June 2012 by Padgett and Gadd (Padgett 2013).
2012: Wagner et. al. counted about 35 plants on 12 March 2012. Most plants on site budding but not yet in full bloom. Plants close to creek bed heavily impacted by siltation from 221 widening project. Plants up slope not as heavily impacted. Last count of plants before highway construction was 130 plants. (Wagner 2012).
2010: 4 plants moved from the area to be impacted by the road project to the transplant area at the Tate conservation easement (EO 286) on 27 January 2010 by NCDOT biologists (Fontaine 2010 - docmentation with EO 286).
2007: 135 clumps counted and observed in March and April 2005 by H W Hochner (Padgett 2007).
2004: A: (primary site) 200-300 rosettes occurring on both north and south sides of the drainage (the majority of the population is on the north side). The population covers approximately 4100 SQM. Approximately one half of the individuals seen were flowering. B [see EO 172]:(secondary site) 9 rosettes occurring on south side of the drainage. The population covers approximately 100 SQM. 5 rosettes were flowering (M. Franklin and J. Padgett 2004).
2003: A: Approximately 20 clumps (10 on each side of US 221), in leaf and flower; seedlings and vegatative evidence of reproduction; a few plants seen on south-facing bank (Renninger 2003). B[see EO 172]: Approxitately 75-100 clumps in 0.232 acres, in leaf and flower; seedlings and colonial vegetative evidence of reproduction;

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO 135 clumps observed and counted in March and April 2005 (Padgett 2007). 200-300 rosettes (M. Franklin and J. Padgett 2004); Approximately 20 clumps (10 on each side of US 221) (Renninger 2003).

Landscape Context

EO Rank BC - Good or fair estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-19

EO Rank Comments EO rank based on EO rank specs for this species and most recent EO data (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

Element Occurrence Report

EO ID 3553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6469

General Description The occurrence is within a Dry Oak-Hickory Forest of high quality along the mid- to lower slopes of two unnamed drainages. The topography is concave, moisture is moist to dry (probably varying seasonally) and site is shaded. Associated species include Quercus alba, Q. phellos, Carya glabra, C. tomentosa, Acer rubrum, Cornus florida, Castanea pumila, Kalmia latifolia, Rhododendron sp., Sassafras albidum, Mitchella repens, Uvularia sp., Epigea repens, Viola sp., Goodyera pubescens, Sanguinaria canadense, Lonicera japonica, Lonicera sempervirens, Osmunda cinnamomea, Asplenium platyneuron, Polystichum acrostichoides, Carex sp., and Panicum sp. (M. Franklin and J. Padgett 2004). [Sub-occurrence A], Mesic Mixed hardwood grading into Dry Mesic Oak Hickory, medium quality to low quality. [Sub-occurrence B], Mesic Mixed Hardwood along mid- to lower slope; Pacolet Soils; medium quality; NE to E facing slopes (mainly); Topoography flat and convex; Moisture is moist to dry; Site is filtered sun/shade; Associated species include: Cary, Liriodendron, Quercus alba, Kalmia, Carpinus, cinnamon fern (Renninger 2003).

Min. Elevation	720.00	**feet**	219.00	**meters**
Max. Elevation	790.00	**feet**	240.79	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Site should be protected from impending road widening project (US 221 scheduled for 2005-2006) and installation of water utility line. The owners have expressed an interest in protecting the area through Registry or Dedication. Ann Prince (NCHP) will follow up with owners (Franklin 2004).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
933	Parris Heartleaf RHA			N

More Management N - No

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	Joyce and Howard Parris, 7061 US Highway 221 S., Mooresb	2012, responded with permission to survey; 2015, did not respond

Owner Comments A: Joyce and Howard Parris, 7061 US Highway 221 S., Mooresboro, NC 28814, (828) 248-2464. B: Mike Parris.
Reminder postcard sent 2016.

OwnerInfo_BCD N

Additional Topics

General Comments Flowers range in color from reddish green to white (Padgett, 2004).

Additonal Topics 3 plants and 0.010 acres expected to be directly impacted and 32 plants and 0.126 acres expected to be indirectly impacted by this road project (Fontaine 2009 - see Biological Assessment). Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site (EO 106) (DOT 2009). "Impacts associated with US 211 widening (R-2233A&B) to be determined" (HDR personnel 2005).

Topic Keywords

Keywords
IMPACTS
NC DOT

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 3553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6469

References

Reference Code	Full Citation	EO Reference Primary
F04NHP01NCUS	Field survey form completed by a NHP staff member and not associated with a report produced by the survey.	N
F03REN01NCUS	Renninger, H. 2003. Field survey.	N
G09DOT04NCUS	Fontaine, Lance. 2009. Supplement memo to accompany materials fro the Application for obtaining, updating, or reviewing protected plant conservation or permits for TIP No. R-2233. [Biological Assessement is included in the materials].	N
F10DOT01NCUS	N.C. Department of Transportation. Field survey forms and related documents contributed by NCDOT staff or NCDOT consultants in 2010.	N
N09DOT01NCUS	North Carolina Department of Transportation. 2009. Conservation Management Plan for Dwarf-Flowered Heartleaf (Hexastylis naniflora) at the Tate Conservation Easement Rutherford County, NC. Unpublished report from NCDOT, Raleigh, NC.	N
U12WAG01NCUS	Wagner, J. 2012. Hexastylis naniflora data. ASU.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P15NHP01NCUS	North Carolina Natural Heritage Program. 2015. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N

Specimen

Specimen Description

A living specimen was donated to the NC Botanical Garden (Chapel Hill) for display and education (Franklin 2004).

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	3/9/2016 12:00:00AM
Transcribed By	MAF	**Transcription Date**	5/5/2004 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	MAF	**Paper Mapping Date**	5/5/2004 12:00:00AM
Digital Mapping By	KAI	**Digital Mapping Date**	6/11/2013 3:30:50PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 3553 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6469

Spatial Attributes

Attribute Name	Attribute Value
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
WATERSHED	194 - 03050105
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
ACREAGE	0.232448
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
HECTARES	0.094069
HUC_12	030501050503
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
MAPSHEET	40483 - 35081-B7
Site_Code	65945
SITE	2493.000000 - S.USNCHP*4588
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	MAF	**Record Create Date**	5/5/2004 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:15:34PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 3284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6200

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 71 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
887	Knob Creek Natural Area	N

Survey Site

Survey Site Name
First Broad River: Knob Creek Natural Area

Directions

First Broad River: Knob Creek natural area: about 1.8 air miles north of Lawndale on the east side of Knob Creek and 0.5 mile west of the junction of Bellwood-Lawndale Road (SR 1643) and Will Dixon Road (SR 1662).

Locators

Latitude [redacted] **Longitude** [redacted]

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-D5	Lawndale	4		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province
PD

Mapping

Element Occurrence Report

EO ID 3284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6200

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent N - Confident full extent of EO is NOT known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Northern most portion of slope not fully explored; plants likely extend along length of the slope (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
3284	2002-05-17; Oakley	Knob Creek Natura	Point	Estimated	100.00	Meters		
28370	2005-05-05; Frankl	Knob Creek Natura	Point	Estimated	25.00	Meters		1998 aerial photos
30705	2005-05-05, Frankl	Knob Creek natural	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2002, 2005

Element Occurrence Report

EO ID 3284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6200

Surveyor

Surveyor

Shawn Oakley, NCNHP
James Padgett, NCNHP
Misty Franklin, NCNHP
Brenda Wichmann, NCNHP

Survey Date 2005-05-05

Last Observation Date 2005-05-05 **First Observation Date** 2002-05-17

EO Data 300 plants estimated by Padgett, 86 clumps over a small area counted by Franklin of which approximately 10% were flowering on 05 May 2005 (Padgett, Franklin and Wichmann 2005). S. Oakley estimted 300 plants in leaf and flower on 17 May 2002 (Oakley 2002).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Approximately 10% flowering

Condition Rating

Size of EO estimate 300

Landscape Context within a 6.5 acre natural area

EO Rank BC - Good or fair estimated viability **EO Origin Subrank**

EO Rank Date 2005-05-05

EO Rank Comments Rank was upgraded from a C to a BC based on rank specifications for the species; BC was chosen to reflect large (greater than 1 acre), high quality (SNHA) forest in which this EO occurs and to account for the fact that the number of clumps listed in EO data was estimated (Wichmann 2005). BASED ON RANK SPECIFICATIONS DETERMINED WITH USFWS.

EO Rank Specifications Version Used

Description

EO Type

General Description The northern sub-population (on the west facing slope east of the sharp bend in the river) is in a more mature forest, with many large trees, including a sourwood > 18" dbh. Young to mature mesic hardwoods on moderate northwest facing slope with Liriodendron, Fagus, Acer rubrum, Halesia tetraptera, Polystichum acrostichoides, MItchella repens Maianthemum recemosum, Polygonatum biflorum, and others (Oakley 2002).

Min. Elevation	820.00	**feet**	250.00	**meters**
Max. Elevation	860.00	**feet**	262.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments During a site visit with one of the landowners, Don Dedmond, in 2005, Franklin and Padgett asked Mr. Dedmond if he thought about formally protecting the site. He indicated that he did not plan to develop the site and that he was interested in conservation, but that he was not interested in formal conservation agreements or in selling the land (Franklin 2005). Mr. Dedford owns the portion of the site that was not recently clearcut.

MA/Ownership

Element Occurrence Report

EO ID 3284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6200

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	NOAH & MAZE WRIGHT	
Private individual	Don Dedmond	527 Belwood-Lawndale Rd; (704) 300-6968

Owner Comments Don Dedmond granted permission for NCNHP to visit and visited the site with Franklin, Padgett, and Wichmann on 5 May 2005.

OwnerInfo_BCD N

Additional Topics

General Comments Identification confirmed; calyx tube openings measured 4-5 mm in the intact community and 6-7mm in the clearcut area (Franklin, Padgett, and Wichmann 2005). OCCURRENCE IN NEED OF VERIFICATION, CALYX TUBE OPENING EXCEEDS 5mm IN WIDTH (OAKLEY 2002).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	Y
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/2/2015 12:00:00AM
Transcribed By	SCO	**Transcription Date**	1/27/2003 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By		**Paper Mapping Date**	
Digital Mapping By	MAF	**Digital Mapping Date**	1/3/2006 2:34:01PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Element Occurrence Report

EO ID 3284 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 6200

Spatial Attributes

Attribute Name	Attribute Value
COUNTY	1839 - NCCLEV
PHYSIOGRAPHIC_PROVINCE	2 - PD
WATERSHED	194 - 03050105
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
HECTARES	3.536822
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
MAPSHEET	39753 - 35081-D5
SITE	887.000000 - S.USNCHP*2238
Site_Code	887
ACREAGE	8.739642
HUC_12	030501050605

Record Maintenance

Record Create User	SCO	**Record Create Date**	1/27/2003 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	10/2/2015 11:07:25PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 2113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 5029

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 52 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20292 **Parent EO Shape ID** 48,363.00 **Parent EO Number** 99

Site/Directions

Sites

Site ID	Name	Auto-calculated
2077	Hensons Creek Natural Area	N

Survey Site

Survey Site Name

Broad River: Hensons Creek Natural Area, Big Island Plantation (west) (Sub EO of EO 099).

Directions

Broad River: Hensons Creek Natural Area, Big Island Plantation (west). This is a sub EO of Parent EO 099 (Wichmann 2005). 0.1 mile north of the Broad River and west of SR 1106. The site is known as The Big Island Plantation LLC (Padgett 2005). West side of SR 1106 just north of the Broad River.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B8	Fingerville East	9		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 2113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 5029

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28913	2001; Padgett	Broad River: Henso	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	

Surveyor

Surveyor
James Padgett, ASU (2001), NHP (2005)

Survey Date 2005-03

Last Observation Date 2005-03 **First Observation Date** 2001-04-06

Element Occurrence Report

EO ID 2113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 5029

EO Data 2012: Site visited in 2012 in attempt to gain permission to monitor (Padgett 2015).
2005: 200-300 plants estimated on March 2005 (Padgett 2005).
2001: 200-300 clumps in leaf and flower on 6 April (Padgett 2001)

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO 200-300 plants estimated on March 2005 (Padgett 2005). 200-300 clumps in leaf and flower on 6 April (Padgett 2001)
Landscape Context Along the road with Quercus alba, Kalmia latifolia, Hepatica americana, and Polystichum acrostichoides (Padgett 2001)

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2001-05-13
EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type
General Description Along the road with Quercus alba, Kalmia latifolia, Hepatica americana, and Polystichum acrostichoides (Padgett 2001)

Min. Elevation	200.00	**feet**	60.96	**meters**
Max. Elevation	260.00	**feet**	79.25	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land **More Protection** **TNC involvement**
Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments Much trash has accumulated in subpopulation 2 along the road (Padgett 2001).

Ownership

Owner Type	Owner Name	Owner Note
Partnership (legal en	Keith Hawthorn	1-800-721-8434 Hawthorn Ford in Belmont
Partnership (legal en	Keith Hawthorn's Father-in-law	Name Unknown

Owner Comments
OwnerInfo_BCD N

Additional Topics

General Comments
Additonal Topics

Element Occurrence Report

EO ID 2113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 5029

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G06PAD01NCUS	Padgett, James 2006, Rutherford County Natural Areas Inventory.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Padgett	**Version Date**	9/18/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	10/8/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/5/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	9/16/2015 10:57:33AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	65945
SITE	2077.000000 - S.USNCHP*335
SITE	2493.000000 - S.USNCHP*4588
Site_Code	2077
HUC_12	030501050501
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	8.74661107618
Hectares	3.53963338507
WATERSHED	194 - 03050105
MAPSHEET	40482 - 35081-B8
COUNTY	1897 - NCRUTH

Record Maintenance

Element Occurrence Report

EO ID 2113 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 5029

Record Create User	JLA	**Record Create Date**	10/8/2001 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	11/18/2015 11:12:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 1776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4692

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 57 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated

Survey Site

Survey Site Name

Second Broad River: Morrow Ceek, tributary NW of RR ROW, about 0.4 miles NE of Alt 221

Directions

Second Broad River: Morrow Creek, along a tributary just northwest of Rail Road Right-of-Way, approximately 0.4 miles northeast of its junction with ALT 221 (Wichmann 2005). Alexander Mills, south of Forest City, approximately 0.25 mile north of Alt 221, along a stream to the west of railroad (Padgett 2001).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Rutherford (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C7	Forest City	6		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 1776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4692

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO rep digitized based on hand drawn map submitted with report of occurrence (Wichmann 2005).

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

Located approximately 3.0 kilometers from EO 154; EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Located approximately 3.0 kilometers from EO 154, suitable habitat between occurrences should be searched (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
28603	2001; Padgett	Second Broad Rive	Polygon	Delimited				1998 aerial photos

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
James Padgett, ASU

Survey Date 2001-05-18

Last Observation Date 2001-05-18 **First Observation Date** 2001-05-18

Element Occurrence Report

EO ID 1776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4692

EO Data MORE THAN 300 CLUMPS OCCURRING ALONG SMALL STREAM FOR 0.1 MILE, IN EARLY FRUIT (SEED MATURING) ON 18 MAY 2001 (PADGETT 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating

Size of EO MORE THAN 300 CLUMPS (PADGETT 2001).

Landscape Context Small tributary to Morris Creek, just north of Rail Road Right of Way; developed area (Wichmann 2005).

EO Rank C - Fair estimated viability **EO Origin Subrank**

EO Rank Date 2001-05-18

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description HARDWOOD FOREST WITH QUERCUS SPP, ACER RUBURM, CORNUS FLORIDA, OSMUNDA CINNAMOMEA, AND MITCHELLA REPENS (PADGETT 2001).

Min. Elevation 870.00 **feet** 265.00 **meters**

Max. Elevation 900.00 **feet** 274.00 **meters**

Observed Area **acres** **hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE - AGI?	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 1776 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4692

References

Reference Code	Full Citation	EO Reference Primary
F01CON01NCUS	Contributed. Field forms or similar data contributed to the NC NHP by persons or organizations outside the program.	N
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N

Specimen

Specimen Description
HERB.BOON 16000, J E PADGETT MAY 18, 2001

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	10/8/2015 12:00:00AM
Transcribed By	JLA	**Transcription Date**	10/8/2001 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	10/8/2001 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	10/6/2015 1:24:54PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreement Not processed per agreement

Spatial Attributes

Attribute Name	Attribute Value
HUC_12	030501050406
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	4.74139578385
Hectares	1.91877776
WATERSHED	194 - 03050105
MAPSHEET	40119 - 35081-C7
COUNTY	1897 - NCRUTH

Record Maintenance

Record Create User	JLA	**Record Create Date**	10/8/2001 12:00:00AM
Last Modified By	LGR	**Last Modified Date**	10/8/2015 11:21:40AM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 1667 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4583

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 74 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20295 **Parent EO Shape ID** 48,385.00 **Parent EO Number** 100

Site/Directions

Sites

Site ID	Name	Auto-calculated
93	Broad River/Sandy Run Natural Areas	N

Survey Site

Survey Site Name
Broad River/Sandy Run Natural Areas: Lower Sandy Run CK, N of Powerline; DOT sites FF and GG (Sub EO of EO 100).
NCDOT Broad River Mitigation Tract
NCDOT TIP: R-2707 US 74 Shelby Bypass

Directions

Broad River/Sandy Run Natural Areas: Lower Sandy Run Creek, north of Powerline Right-of-Way; NC DOT Broad River Tract sites FF and GG; James Padgett's 2001 Site I and J. This is a sub EO of Parent EO 100 (Wichmann 2005). Broad River/Sandy Run Natural Areas(Broad River at Sandy Run subsite): 2.5 air miles southwest of Boiling Springs, east side of Sandy Run, 0.4 air mile north of the confluence of Sandy Run and the Broad River, on north side of a powerline right-of-way;north-facing slope between R-O-W and prominent bend in Sandy Run (Oakley 2001).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-B6	Boiling Springs South	16		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Element Occurrence Report

EO ID 1667 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4583

Physiographic Province

Physiographic Province

PD

Mapping

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

GIS data used to digitize this EO (Wichmann 2005).

EO Development Details

Separation Distance Used 2 Kilometers **Separation Distance Type** Suitable Habitat

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional Yes **Multi-Jurisdictional Spatial Rep** Yes

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
30223	2003; NCDOT Cor	Broad River Tract S	Polygon	Delimited				GPS, 3-meter accu
30224	2003; NCDOT con	Broad River Tract S	Polygon	Delimited				GPS, 3-meter accu
89585	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc
89584	2012; NCDOT Cor	Broad River Greenv	Polygon	Delimited				GPS, 10-meter acc

Survey Information

Element Occurrence Report

EO ID 1667 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4583

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2001

Surveyor

Surveyor
Oakley
NC DOT Personnel

Survey Date 2012-04-12

Last Observation Date 2012-04-12 **First Observation Date** 2001-03-05

EO Data 2012: 675 total: 429 plants counted at site FF and 246 counted at site GG by NCDOT biologists (Bassette 2015).
2008: 490 plants counted by NCDOT biologists at sites FF and GG in April 2008 (Bassette 2008).
2003: 457 observed by NC DOT (Bassette 2003).
2001: Estimate of 100-200 plants in leaf and bud on 5 March (Oakley 2001).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO In leaf and bud on 5 March (Oakley 2001).

Condition Rating

Size of EO 490 plants (2008). 457 observed by NC DOT (Bassette 2003). Estimate of 100-200 plants (Oakley 2001).

Landscape Context

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2008-04

EO Rank Comments EO rank based on EO rank specs written for this species and most recent EO data (Wichmann 2005). Based on rank specifications determined with USFWS.

EO Rank Specifications Version Used

Description

EO Type

General Description Mature Mesic Mixed Hardwood Forest and Piedmont/Coastal Plain HEATH BLUFF communities,north-facing slope between R-O-W and prominent bend in Sandy Run; with Fagus, polystichum, Hepatica, etc. and with Quercus spp., Kalmia, etc.(Oakley 2001).

Min. Elevation	660.00	**feet**	201.00	**meters**
Max. Elevation	720.00	**feet**	219.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments NC DOT mitigation site; see Reference U05HDR01NCUS (Wichmann 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated
889	Broad River Greenway		Y - Yes	N
2492	NC Department of Transportation Mitigation Site		Y - Yes	N
2429	NC Division of Mitigation Services Easement		Y - Yes	N

Element Occurrence Report

EO ID 1667 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4583

More Management

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	MR. WHITFIELD	
State/provincial gove	NC DOT	

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments

Additonal Topics EO is associated with NC DOT project B-2119, see U05HDR01NCUS (Wichmann 2005).

Topic Keywords

Keywords
HEXASTYLIS NANIFLORA
IMPACTS
MITIGATION
NC DOT

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
U03OAK01NCUS	An Inventory of the Significant Natural Areas of Cleveland County, North Carolina.	N
U03HDR01NCUS	HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation. 2003 Dwarf-Flowered Heartleaf (Hexastylis naniflora) Inventory: Broad River Tract, Cleveland County, North Carolina. 12pp.	N
G09DOT01NCUS	Bassette, Tim. 2009. Biological assessment: Upgrade of existing Lovelady Road (SR-1546) from Laurel Street (SR-1545) in Valdese to Malcolm Blvd (SR-1001) in Rutherford College, Burke County, N.C. TIP No. R-2824. NCDOT, Raleigh, NC.	N
G15DOT02NCUS	Bassette, Tim. 2015. Dwarf-Flowered Heartleaf (Hexastylis naniflora) United States Fish and Wildlife Service Monitoring Report, 2012 Survey Broad River Greenway Conservation Area Cleveland County, North Carolina. NCDOT, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility USNCHP

Version Author Name Amoroso **Version Date** 4/18/2016 12:00:00AM

Transcribed By JTF **Transcription Date** 2/4/2003 12:00:00AM

Manual File Note

Mapping

Paper Mapping By **Paper Mapping Date**

Digital Mapping By JLA **Digital Mapping Date** 4/21/2016 11:30:01AM

Quality Control

Data QC Status Incomplete **Data QC By**

Map QC Status Incomplete **Map QC By**

Comments

Other Spatial Attributes

Element Occurrence Report

EO ID 1667 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 4583

Reference Point

X Coordinate [redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
PHYSIOGRAPHIC_PROVINCE	2 - PD
SITE	93.000000 - S.USNCHP*2244
SITE	2493.000000 - S.USNCHP*4588
Site_Code	65945
Site_Code	93
HUC_12	030501050505
LONGITUDE_DD	[redacted]
LATITUDE_DD	
LONGITUDE_DMS	
LATITUDE_DMS	
UTM_EASTING	
UTM_NORTHING	
UTM_ZONE	
Acreage	2.64444076154
Hectares	1.07016886002
WATERSHED	194 - 03050105
MAPSHEET	40484 - 35081-B6
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User SCO **Record Create Date** 1/31/2003 12:00:00AM

Last Modified By JTF **Last Modified Date** 5/31/2016 9:05:22AM

Do Not Exchange N

Last Received Date **Last Received Status**

Last Data Exchange **Last Succeeded Date**

Element Occurrence Report

EO ID 643 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3559

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 28 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 22250 **Parent EO Shape ID** 61,687.00 **Parent EO Number** 216

Site/Directions

Sites

Site ID	Name	Auto-calculated
2237	Buffalo Creek Rare Plant Site	N

Survey Site

Survey Site Name

Buffalo Creek: Friendship Chapel and Long Creek [Cleveland County Landfill] (Sub EO of EO 216).
Special Protection Environmental Area within the Cleveland County Landfill on Airport Road

Directions

Buffalo Creek: Friendship Chapel, northeast bank of Long Creek located north-east of Friendship Chapel and in the southern portion of the Buffalo Creek Rare Plant Site; Clevland County Landfill. This is a sub EO of Parent EO 216 (Wichmann 2005). Cleveland County Landfill, east side of Long Creek on the north and west facing slopes of a prominent ridgeline (Huysman 1996).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Cleveland (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-C4	Waco	1		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed

03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 643 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3559

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

Plants cover roughly 30-40 percent (5208.5 to 6944.6 meters squared) of the entire 4.29 acre (17361.6 meters squared) site (Padgett 2005).

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

All sub EOs area located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details. The landfill isolates this site from possible unknown populations and habitat found upstream along Buffalo Creek as well as possible sites and habitats upstream along Long Creek (Padgett 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent Y - Confident full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
26148	1996-05-03; Newb	Buffalo Creek: Frie	Polygon	Delimited				GPS, 5-meter accu
90153	2016; Tuttle	Special Protection I	Polygon	Delimited				GPS, 5-meter accu

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1996, 2005

Element Occurrence Report

EO ID 643 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3559

Surveyor

Surveyor

Newberry
James Padgett, NHP
Julie Tuttle

Survey Date 2016-08-03

Last Observation Date 2016-08-03 **First Observation Date** 1996-05-03

EO Data 2016: An estimated 250 clumps were observed in two stream bluff areas totalling an estimated 1.25 acres on 3 August 2016. Plants and habitat appear in good condition (Tuttle 2016).
2005: 300 to 400 estimated plants along slopes and flats along or near Long Creek. Observed by Padgett on 12 January 2005. Plants are viable and healthy (Padgett 2005).
1996: 250 to 300 plants multiple aged, stable and prolifically flowering (Newberry 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO B - This site has been preserved apart from the landfill and the habitat is intact. The plants appeared to be very healthy with nice good sized clumps. Disturbance has been limited to the landfill and along a road near Long Creek which comes out near the bottom of the landfill. The site is further protected by a wire fence around most of the known population (Padgett 2005)..

Condition Rating

Size of EO B - This site is a good averaged size population of Hexastylis naniflora. The most recent estimated count of individuals places the numbers of clumps around 400 (Padgett 2005)..

Landscape Context B - The relative quality of this site is hampered by its proximity to the landfill as well as to other structures, clearings and roads adjacent and associated with this site. The landfill isolates this site from possible unknown populations and habitat found upstream along Buffalo Creek as well as possible sites and habitats upstream along Long Creek (Padgett 2005).

EO Rank B - Good estimated viability **EO Origin Subrank**

EO Rank Date 2016-03-08

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Moist, moderately steep slopes adjacent to Long Creek and an intermittent drainage area that drains into Long Creek. Canopy dominated by Quercus alba and Liriodendron tulipifera with other oak, hickory, and hardwood species also present in the canopy, subcanopy, and shrub layers. Habitat quality is good, although these two stream bluff areas seem small and fairly isolated within the surrounding landfill property. (Tuttle 2016).
Mesic Mixed Hardwood Forest. with Fagus grandifolia, Ilex opaca, Prunus serotina, Vaccinium spp., Polystichum acrostichoides, Tipularia discolor, Cornus florida, Vitus spp, Smilax spp, Carpinus caroliniana, Lonicera japonica, Pinus taeda, Mitchella repens, Chimaphila masculata, Juniperus virginiana, Acer rubrum, Quercus rubra, Lyquidambar styraciflua, Liriodendron tulipifera, Pinus virginiana, Quercus alba (Huysman 1996). The slope above the creek contains a very diverse collection of spring ephemerals (Newberry 1996).

Min. Elevation	780.00	**feet**	237.74	**meters**
Max. Elevation	820.00	**feet**	249.94	**meters**
Observed Area	4.29	**acres**	1.74	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

Element Occurrence Report

EO ID 643 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3559

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land ? - Questionable **More Protection** Y - Yes **TNC involvement**

Protection Comments The area has been designated as Special Protected Environmental Area by Cleveland County.

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management Y - Yes

Management Comments Recommendation of border species by G. Newberry should be considered (Padgett 2005). --G. Newberry recommends planting a protective border of trees such as locust, pine, or red maple on the upslope edge adjacent to the landfill to protect the slope from runoff and edge species such as Lonicera or kudzu.

Ownership

Owner Type	Owner Name	Owner Note
Local government	CLEVELAND COUNTY	

Owner Comments Contact at the Cleveland County Landfill is Sam Lockridge, 704-447-8204. (Tuttle 2016).

OwnerInfo_BCD Y

Additional Topics

General Comments Invasive species present include Microstegium vimineum, Pueraria lobata, and Ligustrum sinense. These are not abundant on the bluff areas or where H. naniflora occurs, but they are abundant or dominant in areas adjacent to the species' habitat or elsewhere on the landfill property. Area of suitable habitat may include the larger area mapped previously for this EO. This survey confirmed the northern streamside boundary of the population and suitable habitat; at this northern streamside boundary is a small, grassy roadcut to the stream, and Microstegium vimineum overwhelmingly dominates the herbaceous layer in the forest north of this roadcut. (Tuttle 2016)

Additonal Topics Geology : CZbg - Biotite gneiss and schist- Inequigranular, locally abundant potassic feldspar and garnet; interlayered and gradational with calc-silicate rock, sillimanite-mica schist, mica schist, and amphibolite. Contains small masses of granitic rock

Topic Keywords

Keywords
GEOLOGY

Documentation

Boundaries Y - Yes **Image** Y

References

Reference Code	Full Citation	EO Reference Primary
U04PAD01NCUS	Padgett, James E. 2004. Biogeographical, Ecological, morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Master Thesis, Appalachian State University	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
F16TUT03NCUS	Tuttle, Julie. 2016. Field survey forms, shapefiles, reports and other contributions for USFWS Flex Fund Hexastylis naniflora occurrence visits in 2016.	N

Specimen

Specimen Description
HERB.USCS NEWBERRY & HUYSMAN 11965, 3 MAY 1996.

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	8/19/2016 12:00:00AM
Transcribed By	JLA	**Transcription Date**	4/11/1997 12:00:00AM
Manual File Note			

Element Occurrence Report

EO ID 643 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3559

Mapping

Paper Mapping By	JLA	**Paper Mapping Date**	4/11/1997 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	8/19/2016 1:27:00PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate Not processed per agreement Not processed per agreement **Y Coordinate** 1 Not processed per agreem Not processed per agreeme

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	52410
SITE	2237.000000 - S.USNCHP*3285
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
HUC_12	030501050802
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester
Acreage	4.29249527786
Hectares	1.73711388999
WATERSHED	194 - 03050105
MAPSHEET	40122 - 35081-C4
COUNTY	1839 - NCCLEV

Record Maintenance

Record Create User	JLA	**Record Create Date**	4/11/1997 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	8/26/2016 6:15:31PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 626 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3542

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 25 **Field Office Number**

ID Confirmed N - No

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
1699	Hildebran/Henry River Slopes	N

Survey Site

Survey Site Name
South Fork Catawba River: Henry Fork Hildebran/Henry River Slopes

Directions

South Fork Catawba River: Henry Fork Hildebran/Henry River Slopes: ALONG NORTH SIDE OF HENRY FORK, EAST OF HENRY RIVER. A DIRT ROAD LEADS DOWN FROM THE YODER HOUSE TO A NARROW FIELD BY HENRY FORK. THE NEXT RAVINE UPSTREAM FEATURES A THIN BROOK BELOW STEEP BANKS.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Burke (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-F4	Longview	6		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 626 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3542

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

EO is not located within 2.0 kilometers of another known EO of the same species (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent

Additional Inventory Needed

Additional Inventory Needed Y

Additional Inventory Needed Comments

Confimation of ID needed; EO discovered in March (pre-anthesis) (Wichmann 2005).

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
626	1985; Moye	South Fork Catawb	Point	Estimated	100.00	Meters		

Survey Information

Survey Type

Survey Type	EO Survey Note
Quantitative ground survey	1994

Surveyor

Surveyor
Moye

Survey Date 1985-03

Last Observation Date 1985-03 **First Observation Date** 1985-03

EO Data PERHAPS 20 (OR MORE?) IN PRE-ANTHESIS & ANTHESIS IN MARCH 1985 (MOYE 1994).

Element Occurrence Report

EO ID 626 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3542

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments
Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO

Condition Rating
Size of EO
Landscape Context

EO Rank U - Unrankable **EO Origin Subrank**

EO Rank Date 1985-03-01
EO Rank Comments ID not confirmed (Wichmann 2005). UPSLOPE WOODS SHOW EVIDENCE OF PAST (RECENT?) LOGGING & PERHAPS STORM DAMAGE, BUT IMMEDIATE HABITAT NOT AFFECTED (1985).
EO Rank Specifications Version Used

Description

EO Type
General Description PERHAPS DRY-MESIC OAK-HICKORY FOREST; NORTHWEST-FACING, 45-50 DEGREE, LOWER SLOPE, FILTERED TO DEEPLY SHADED, MESIC, WITH DOMINANTS QUERCUS ALBA, Q.RUBRA, KALMIA LATIFOLIA, HEPATICA AMERICANA, EPIGAEA REPENS (MOYE 1994).

Min. Elevation	960.00	**feet**	293.00	**meters**
Max. Elevation	1,000.00	**feet**	305.00	**meters**
Observed Area		**acres**		**hectares**

Protection

U.S. Endangered Species Act Status
State Interpreted Status LT **EO Interpreted USESA Status**
USESA LT: Listed threatened
COSEWIC Status
Provincial Interpreted Status **EO Interpreted COSEWIC Status**
COSEWIC Status

More Land ? - Questionable **More Protection** ? - Questionable **TNC involvement**
Protection Comments TIMBER HARVEST SEEMS LIKELY, ESP. IF LAND PASSES TO NEW OWNER (MOYE 1994).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management
Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments MS. YODER
OwnerInfo_BCD Y

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** Y

Element Occurrence Report

EO ID 626 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3542

References

Reference Code	Full Citation	EO Reference Primary
U94MOY01NCUS	Moye, W.S. 1994. Inventory of the South Mountains, North Carolina. Conservation Trust for North Carolina, Raleigh, NC. NC Natural Heritage Program, Division of Parks and Recreation, Raleigh, NC.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Wichmann	**Version Date**	12/2/2005 12:00:00AM
Transcribed By	MJR	**Transcription Date**	9/27/1995 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	MJR	**Paper Mapping Date**	9/25/1995 12:00:00AM
Digital Mapping By	admin	**Digital Mapping Date**	5/18/2004 12:00:00AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Not Reviewed	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate 3[redacted] **Y Coordinate** [redacted]

Spatial Attributes

Attribute Name	Attribute Value
MAPSHEET	39023 - 35081-F4
WATERSHED	191 - 03050102
LONGITUDE_DMS	[redacted]
UTM_EASTING	
LATITUDE_DMS	
HECTARES	3.125667
LONGITUDE_DD	[redacted]
UTM_ZONE	
LATITUDE_DD	
UTM_NORTHING	
ACREAGE	7.71
Site_Code	1699
SITE	1699.000000 - S.USNCHP*2036
COUNTY	1828 - NCBURK
HUC_12	030501020102

Record Maintenance

Record Create User	MJR	**Record Create Date**	9/27/1995 12:00:00AM
Last Modified By	nature	**Last Modified Date**	11/3/2014 1:14:56PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3301

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 23 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID **Parent EO Shape ID** **Parent EO Number**

Site/Directions

Sites

Site ID	Name	Auto-calculated
2432	Mill Creek Forest and Seep	N

Survey Site

Survey Site Name
Mill Creek Forest and Seep
USFWS Flex Fund Monitoring Site 4

Directions

Mill Creek Forest and Seep. Approximately 0.7 mi east of the community of Kross Keys, north of NC 9 and east of SR 1338, along an unnamed tributary to Mill Creek (Robinson 2015).

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Polk (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35082-B1	Fingerville West	3		

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050105 - Upper Broad

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3301

Representation Accuracy

Represenstation Accuracy High

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used 1 Kilometers **Separation Distance Type** Unsuitable Habitat

Separation Comments

Within 2.0 kilometers of EO 160 but not part of a principal-sub relationship due to topography and persistently unsuitable in between the 2 EOs (Wichmann 2005).

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional Unknown **Multi-Jurisdictional Spatial Rep**

Multi-Jurisdiction Collab Comments

Within 5.0 kilometers of the South Carolina border (Wichmann 2005).

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
68191	Padgett 2012	Mill Creek Forest ar	Polygon	Delimited				GPS, 10-meter acc
68192	Padgett EO 23 plot	Mill Creek Forest ar	Polygon	Delimited				GPS, 10-meter acc
89884	Bloom 2016	Mill Creek Forest ar	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	2005,
Quantitative ground survey	2012, 2013, 2014, 2015, 2016

Element Occurrence Report

EO ID 385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3301

Surveyor

Surveyor

Nora Murdock, USFWS
Misty (Franklin) Buchanan, NCNHP
Brenda Wichmann, NCNHP
James Padgett, NCNHP
Doug Rayner, Wofford College
Stovall
Gill Newberry
James Padgett, NHP 2013
Laura Gadd, NHP
Sean Bloom, Catawba Land Conservancy

Survey Date 2016-05-13

Last Observation Date 2016-05-13 **First Observation Date** 1992-1993

EO Data 2016: 212 plants counted by Bloom on 13 May 2016. Estimated 1459 plants covering the entire remapped 1.39 acres (Bloom 2016).
2015: 211 plants counted by Padgett on 19 May 2015 in 0.14 acres of monitoring plots. Estimated 1700 total plants covering the entire 1.17 acres (Padgett 2015).
2014: Padgett counted 213 plants in permanent monitoring plots on 19 May 2014 and estimated a total of 1780 plants over 1.17 acres (Padgett 2014).
2013: Padgett counted 211 plants in permanent monitoring plots on 16 July 2013 and estimated a total of 1763 plants over 1.17 acres (Padgett 2013).
2012: 208 plants counted in 0.14-acre sample plot in 2012. Estimate of 1738 plants total. (Padgett 2012). This site was revisited by James Padgett and Laura Gadd (NHP) and remapped in June 2012.
900 counted, probably at least 1,000 plants (Franklin and Padgett 2005). 150-200 plants observed by Newberry in 1995 or 1996 (Newberry 1996). Stovall and Murdock disovered this occurrence in 1992 or 1993 (reported in Newberry 1996).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO Timbering is occurring on uplands and cows have periodic access to site (Newberry 1996).

Condition Rating

Size of EO Estimated over 1700 plants (Padgett 2013). 900 counted, probably at least 1,000 plants (Franklin and Padgett 2005). No information.

Landscape Context

EO Rank A - Excellent estimated viability **EO Origin Subrank**

EO Rank Date 2015-05-29

EO Rank Comments EO rank based on EO rank specs for the species (Wichmann 2005).

EO Rank Specifications Version Used

Description

EO Type

Element Occurrence Report

EO ID 385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3301

General Description LOW ELEVATION SEEP (PIEDMONT/MOUNTAIN SPRINGHEAD SUBTYPE – Canopy is primarily Acer rubrum and Liriodendron tulipifera, but also includes Nyssa sylvatica and Fraxinus pennsylvanica. The sub canopy is primarily Acer rubrum, Ilex opaca, Carpinus caroliniana, and saplings of Fraxinus pennsylvanica and Fagus grandiflora. The shrub layer is predominately Viburnum nudum var. nudum, Vaccinium corymbosum, Rhododendron periclymenoides, Lindera benzoin, and Calycanthus floridus. Other shrubs found throughout are Amelanchier arborea and Itea virginica. Much of the shrub layer is bound up with Smilax laurifolia and less often with Smilax rotundifolia, Muscadinia rotundifolia, and Parthenocissus quinquefolia. The ground and many of the trees are covered with vines of Decumaria barbara. The herbaceous layer is dominated by Parathelypteris noveboracensis, Osmundastrum cinnamomeum, Osmunda spectabilis, and Lorinseria areolate. The herbaceous layer also includes Polystichum acrostichoides, Viola sororia, Arundinaria gigantea, Arisaema triphyllum, Medeola virginiana, Mitchella repens, and Microstegium vimineum. There were also a number of Trillium rugelii found in fruit.(Bloom 2016)
Nice Piedmont Boggy Streamhead (?) with Pinus virginiana, Quercus alba, Liriodendron tulipifera, Ilex opaca, Nyssa sylvatica, Carex lurida, C. intumescens var. intumescens, C. atlantica, C. debilis, Polystichum acrostichoides, Xanthorhiza simplicissima, Mitchella repens, Thelypteris noveboracensis, Fagus grandiflora, Vaccinum corymbosum, Ilex opaca, Microstegium vimineum, Rhododendron Af. periclymenoides, Toxicodendron radicans, Platanus occidentalis, Viola sororia [V. papilionaceae], Calycanthus floridus, Sassafrass albidum, Uvularia perfoliata, and Vitis rotundifolia (Franklin et al. 2005). Piedmont bog, shrubby, near cow pasture, cows have access to site, logging has recently occurred (1993).

Min. Elevation	820.21	**feet**	250.00	**meters**
Max. Elevation	918.64	**feet**	280.00	**meters**
Observed Area	1.17	**acres**	0.47	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments Horse pasture has been fenced but perhaps extends into wetland (Franklin 2005).

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management ? - Questionable

Management Comments

Ownership

Owner Type	Owner Name	Owner Note
Private individual	David Cantrell, 205 Kenwood Drive, Shelby, NC 28150	2012 permission granted, 2016 reminder postcard mailed

Owner Comments

OwnerInfo_BCD N

Additional Topics

General Comments A small amount of Microstegium vimineum found in the seep and only a few stems of Lonicera japonica were observed. Threat: Low / Scope: Low / Immediacy: Low (Bloom 2016).

Additonal Topics

Topic Keywords

Keywords

Documentation

Boundaries **Image** N

Element Occurrence Report

EO ID 385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3301

References

Reference Code	Full Citation	EO Reference Primary
F05NHP01NCUS	Field survey form completed by a NHP staff member for 2005 field work and not associated with a report produced by the survey.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N
R13NHP01NCUS	NC Natural Heritage Program. 2013. Hexastylis naniflora Flex Fund grant annual report.	N
R12PAD01NCUS	Padgett, James. 2012. Hexastylis naniflora Flex Fund annual report. NCNHP.	N
R14NHP01NCUS	NC Natural Heritage Program. 2014. Hexastylis naniflora Flex Fund grant annual report.	N
R15NHP01NCUS	NC Natural Heritage Program. 2015. Hexastylis naniflora Flex Fund grant annual report.	N
P12NHP01NCUS	North Carolina Natural Heritage Program. 2012.Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
P16NHP01NCUS	North Carolina Natural Heritage Program. 2016. Letters or other communication to landowners requesting permission to survey for Hexastylis naniflora, and their replies. USFWS Flex Fund Contract.	N
R16NHP01NCUS	NC Natural Heritage Program. 2016. Hexastylis naniflora Flex Fund grant annual report.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Amoroso	**Version Date**	6/7/2016 12:00:00AM
Transcribed By	MJR	**Transcription Date**	8/4/1994 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	MJR	**Paper Mapping Date**	7/26/1994 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	6/7/2016 1:24:21PM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate 3[redacted] **Y Coordinate** [redacted]

Element Occurrence Report

EO ID 385 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3301

Spatial Attributes

Attribute Name	Attribute Value
Site_Code	62859
SITE	2432.000000 - S.USNCHP*4288
PARENT_EO_ID	67672
PARENT_EO_ID	70668
HUC_12	030501050203
LONGITUDE_DD	Not processed per agreement with Plaintiff/Requester
LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	1.39963401585
Hectares	0.566412665001
WATERSHED	194 - 03050105
MAPSHEET	40481 - 35082-B1
COUNTY	1891 - NCPOLK

Record Maintenance

Record Create User	MJR	**Record Create Date**	8/4/1994 12:00:00AM
Last Modified By	JTF	**Last Modified Date**	7/26/2016 6:14:26PM
Do Not Exchange	N		
Last Received Date		**Last Received Status**	
Last Data Exchange		**Last Succeeded Date**	

Element Occurrence Report

EO ID 109 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3025

Summary

Classification Code

Subnational Scientific Name *Hexastylis naniflora* **Nation** US **Global Rank** G3

Subnational Common Name Dwarf-flowered Heartleaf **Subnation** NC **Subnational Rank** S3

Identifiers

ELCODE_BCD PDARI03060 **EO Number** 4 **Field Office Number**

ID Confirmed Y - Yes

Element

Element Subnational ID 15335 **Protection Status** T **Data Sensitive Element**

Data Sensitive No

Data Sensitive Category

Data Sensitive Reasons

Precision_BCD

Parent EO

Parent EO ID 20291 **Parent EO Shape ID** 48,337.00 **Parent EO Number** 98

Site/Directions

Sites

Site ID	Name	Auto-calculated
2545	Cat Square Heartleaf Forest	N

Survey Site

Survey Site Name
South Fork Catawba River: Indian Creek, Sigmon Farm (sub EO of EO 098)
Sigmon Farm (per Gaddy, 1981)

Directions

South Fork Catawba River: Indian Creek, Sigmon Farm. This is a Sub EO of Parent EO 098 (Wichmann 2005). Sigmon Farm: just north of Cat Square site, about 0.5 mile due west of Cat Square, about 0.2 mile north of SR 1113, along unnamed intermittent stream.

Locators

Latitude Not processed per ag Not processed per ag **Longitude** Not processed per agreem Not processed per agreem

South **North** **East** **West**

County

County Name	State	Nation
Lincoln (NC)	NC	US

Local Jurisdiction

Name

Mapsheet

Mapsheet Code	Mapsheet Name	Margin Number	Dot Number	Ten Ten
35081-E4	Banoak			

Township/Range/Section

Town Range	Section	Meridian	TRS Note

Watershed

Watershed
03050102 - South Fork Catawba

Physiographic Province

Physiographic Province

Mapping

Element Occurrence Report

EO ID 109 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3025

Representation Accuracy

Represenstation Accuracy Medium

Rpresentation Accuracy Comments

EO Development Details

Separation Distance Used **Separation Distance Type**

Separation Comments

All sub EOs are located within 2.0 Kilometers of one another and are not separated by an area of persistently unsuitable habitat greater than 1.0 kilometer wide (Wichmann 2005). See map for details.

EO Specifications Version Used

Reason for Creating a New EO

EO Representation

EO Representation Edited N

EO Representation Edited Comments

Representation Extent

Confidence Extent ? - Uncertain whether full extent of EO is known

Additional Inventory Needed

Additional Inventory Needed N

Additional Inventory Needed Comments

Multi-Jurisdictional

Multi-Jurisdictional No **Multi-Jurisdictional Spatial Rep** No

Multi-Jurisdiction Collab Comments

Sources Features

Source Feature ID	Descriptor	Locator	Conceptual Feature Type	Uncertainty Type	Uncertainty Distance	Unit	Location Use Class	Digitizing Base
49067	1996; Newberry	South Fork Catawb	Polygon	Delimited				1:24,000 topos (di

Survey Information

Survey Type

Survey Type	EO Survey Note
Qualitative ground survey	1981, 1995, 2001

Element Occurrence Report

EO ID 109 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3025

Surveyor

Surveyor

J.T. Soule, HARP
L.R. Gaffney, HARP
D. Gillespie, HARP
Gaddy
Newberry
Padgett, ASU

Survey Date 2001-04-02

Last Observation Date 2001-04-02 **First Observation Date** 1981-10

EO Data 2001: Padgett estimated 200 plants on 2 April 2001 (Padgett 2001).
1995: 150 to 200 plants observed by Newberry in 1995. Population appears stable (Newberry 1996).
1981: About 100 plants over 400 sqm observed by Gaddy in October 1981, with excellent flower and seed production (Gaddy 1981).

Contacts

Contact ID	Individual Name	Institution Name	EO Contact Note

Monitoring Needs Comments

Research Needs Comments

EO Rank

EO Rank Factor Survey Data

Condition of EO With excellent flower and seed production (Gaddy 1981).

Condition Rating

Size of EO Estimated 200 plants (Padgett 2001). 150 to 200 plants (Newberry 1995). About 100 plants (Gaddy 1981).

Landscape Context

EO Rank CD - Fair or poor estimated viability **EO Origin Subrank**

EO Rank Date 2001-04-02

EO Rank Comments

EO Rank Specifications Version Used

Description

EO Type

General Description Mesic mixed hardwood forest heavily impacted by selective and clear-cut timbering. Canopy species include Acer rubrum and Quercus alba, the subcanopy includes Cornus florida and Ilex opaca, shrubs include Euonumus americanus and Viurnum nudiflorum, Herbs include Goodyera pubescens, Stellaria media and Tipularia discolor.
Creekhead and slopes. Plants are on well-drained, mesic slope.

Min. Elevation	1,000.00	**feet**	305.00	**meters**
Max. Elevation		**feet**		**meters**
Observed Area	1.00	**acres**	0.40	**hectares**

Protection

U.S. Endangered Species Act Status

State Interpreted Status LT **EO Interpreted USESA Status**

USESA LT: Listed threatened

COSEWIC Status

Provincial Interpreted Status **EO Interpreted COSEWIC Status**

COSEWIC Status

More Land Y - Yes **More Protection** Y - Yes **TNC involvement**

Protection Comments

MA/Ownership

Managed Area

MA ID	Managed Area Name	Managed Area Type	Contained	Auto-calculated

More Management

Management Comments

Element Occurrence Report

EO ID 109 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3025

Ownership

Owner Type	Owner Name	Owner Note
Unknown	PRIVATE	

Owner Comments Ray Sigmon, Rt. 2 Box 468, Vale NC 28168.
OwnerInfo_BCD Y

Additional Topics

General Comments
Additonal Topics
Topic Keywords

Keywords

Documentation

Boundaries **Image** N

References

Reference Code	Full Citation	EO Reference Primary
G02MAT01NCUS	Matthews, J., L. Gaffney, et. al. 2002. Lincoln County, North Carolina Natural Heritage Inventory.	N
U81GAD02NCUS	Gaddy, L.L. 1981. The Status of Hexastylis naniflora Blomquist in North Carolina. Rte 1, Box 223, Walhalla, S.C. 29691.	N
U96NEW01NCUS	Newberry, Gill. 1996. North Carolina Populations of Hexastylis naniflora. Status survey funded by US Fish & Wildlife Service.	N

Specimen

Specimen Description

CDREV_BCD N

Version/QC

Version Tracking

Lead Responsibility	USNCHP		
Version Author Name	Robinson	**Version Date**	11/17/2015 12:00:00AM
Transcribed By	ASW	**Transcription Date**	9/2/1987 12:00:00AM
Manual File Note			

Mapping

Paper Mapping By	ASW	**Paper Mapping Date**	9/2/1987 12:00:00AM
Digital Mapping By	JLA	**Digital Mapping Date**	5/3/2016 11:19:42AM

Quality Control

Data QC Status	Incomplete	**Data QC By**	
Map QC Status	Incomplete	**Map QC By**	
Comments			

Other Spatial Attributes

Reference Point

X Coordinate	Not processed per agreement Not processed per agreement	**Y Coordinate**	Not processed per agreement Not processed per agreement

Element Occurrence Report

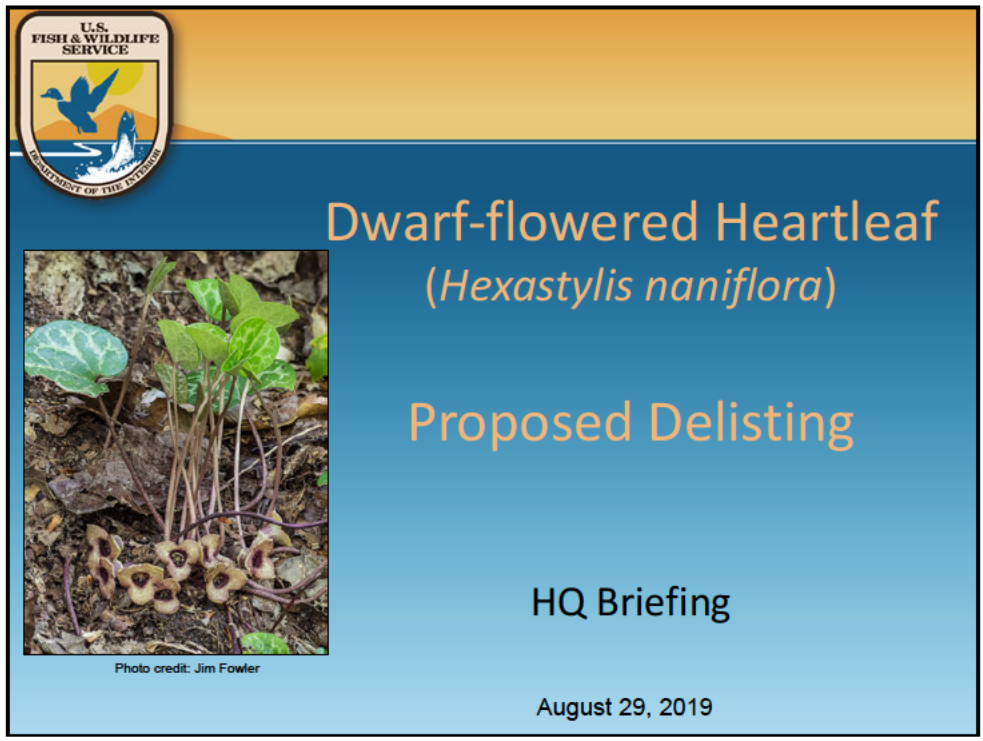
EO ID 109 **Subnational Scientific Name** *Hexastylis naniflora* **Shape_ID** 3025

Spatial Attributes

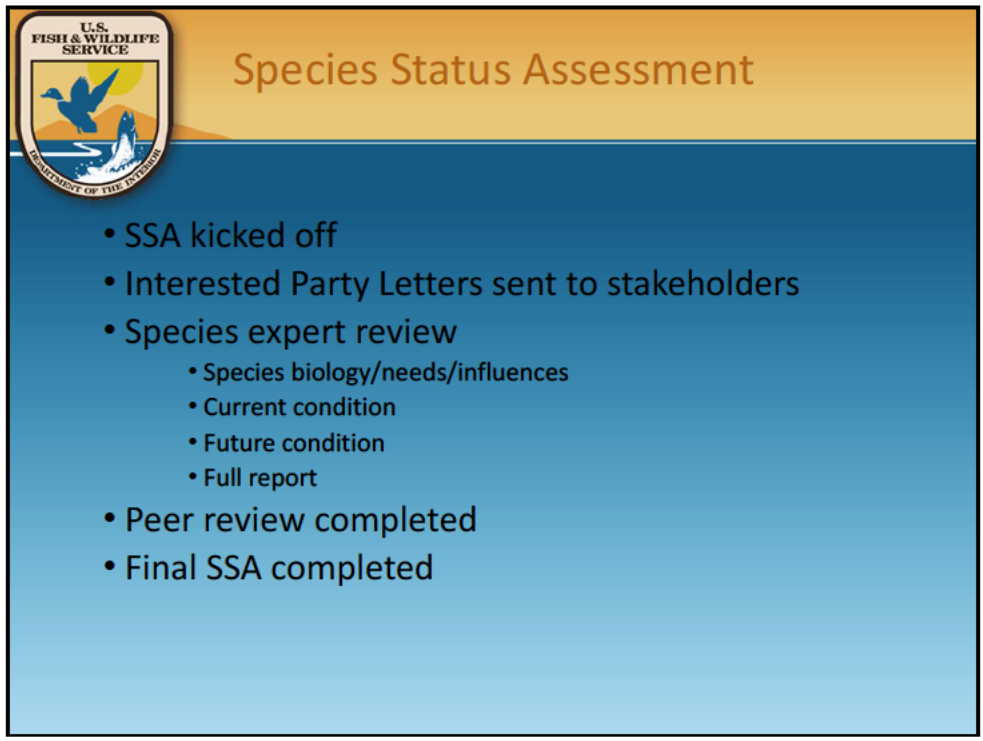
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LATITUDE_DD	Not processed per agreement with Plaintiff/Requester
LONGITUDE_DMS	Not processed per agreement with Plaintiff/Requester
LATITUDE_DMS	Not processed per agreement with Plaintiff/Requester
UTM_EASTING	Not processed per agreement with Plaintiff/Requester
UTM_NORTHING	Not processed per agreement with Plaintiff/Requester
UTM_ZONE	Not processed per agreement with Plaintiff/Requester
Acreage	7.18803017891
Hectares	2.90889709998
WATERSHED	191 - 03050102
MAPSHEET	39390 - 35081-E4
COUNTY	1871 - NCLINC

Record Maintenance

Record Create User	ASW	**Record Create Date**	9/2/1987 12:00:00AM
Last Modified By	JLA	**Last Modified Date**	5/3/2016 11:20:18AM
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Last Data Exchange		**Last Succeeded Date**	



This presentation was given to HQ on Aug 30, 2019 by Byron Hamilton with the RO. Rebekah was on the call to answer questions following the presentation. These are Rebekah's notes to prepare for Q&A.



We started the SSA process by sending Dear Interested Party letters to those that we thought would be interested or have information to share about the species – January 10, 2018. We sent 78 emails and 6 letters. We received 3 responses.

We first engaged our experts during a kick-off call and presentation in January of 2018. This was followed by elicitation questions and review of the SSA during each phase of the writing process.

NCNHP was incredibly involved in the process and provided input that helped shape the SSA. SCHTP declined to participate on the expert team citing that they had not worked with the species in many years and weren't sure what additional information they could contribute to the process. They did provide us with heritage data and they were asked to participate in the peer review process.

We sent the SSA to seven potential peer reviewers on May 11. Peer review officially ended on June 4. To date we have received no comments.

<u>Other notes</u>
Have timeline
Who responded – David Brown (Corps related projects), Jennifer Robertson (quarry site and ski lake), and Gill Newberry (differences between HENA and HEHE)
Have elicitation questions

<u>The HENA Team</u>
Core Team

Mike Marshall is with the Atlanta RO and is our lead writer.
I am a part of the Core Team.
Mark Endries is a GIS Analyst in our Asheville ES Field Office and completed all of the GIS modeling you see in the SSA.
Stephanie DeMay is with Texas A&M University's Natural Resources Institute and she provide additional review of the SSA.
Byron Hamilton and Drew Becker are our project managers and they provided support from the RO.
Expert Team
Suzanne Mason – Conservation Data Manager with NCNHP
Jame Amoroso – Conservation Information Specialist with the NCNHP
Laura Robinson – Botanist with the NHP and author or co-author of the NCNHP report referenced in the SSA
Dr. Matt Estep – Assistant Professor in the Department of Biology at ASU with a focus on Evolutionary Genetics and Genomics

Peer Review
We sent the SSA to seven potential peer reviewers on May 11, 2018.

Wesley Knapp – Western Regional Ecologist and Botanist with the NCNHP
Tim Bassette – Environmental Program Consultant with the NCDOT
Dr. Gillian Newberry - retired botanist from USC-Upstate
Dr. Doug Rayner – Professor of Biology at Wofford College with an emphasis on botany and ecology
Dr. Chick Gaddy – field-trained naturalist and consulting biologist
Dr. Zack Murrell – Professor and chair of the Biology Department at ASU focusing on plant systematics, speciation and hybridization, Southern Appalachian floristics and biogeography
Herrick Brown – Assistant Botanist at the SC Heritage Trust Program

All of the individuals chosen has worked closely with the species at some point during their careers. Peer review ended on June 4, 2018 and we have received no comments to date.

Other notes
Floristics – study of the plants in a specific area



HENA was listed as threatened in 1989. At the time of listing, there were 24 known populations in 8 counties. This included approx. 5,000 individuals. Residential and industrial development was cited as the main threat. (Counties: SC – Chero, Green, Spart and NC – Clev, Cata, Burk, Ruth, Linc)

A recovery outline was developed in 1989. And, the outline indicated the draft plan would be completed by FY91. However, a Recovery Plan was never complete. The lack of Recovery Plan was what initially triggered this SSA; however, a significant amount of recovery has occurred. (There were attempts at Recovery Plans or Criteria by others – James Padgett, Gill Newberry, and NHP)

A 5-YR Review was finalized in 2011.

A Range-wide Status Report was finalized in 2016.

The SSA was initiated in January of 2018 and there are now 119 populations in 13 counties totaling more than 300,000 individuals.

<u>Other notes</u>
At the time of listing - Other threats cited in the listing rule include conversion of habitat to pasture or small ponds, timber harvesting, and cattle grazing.

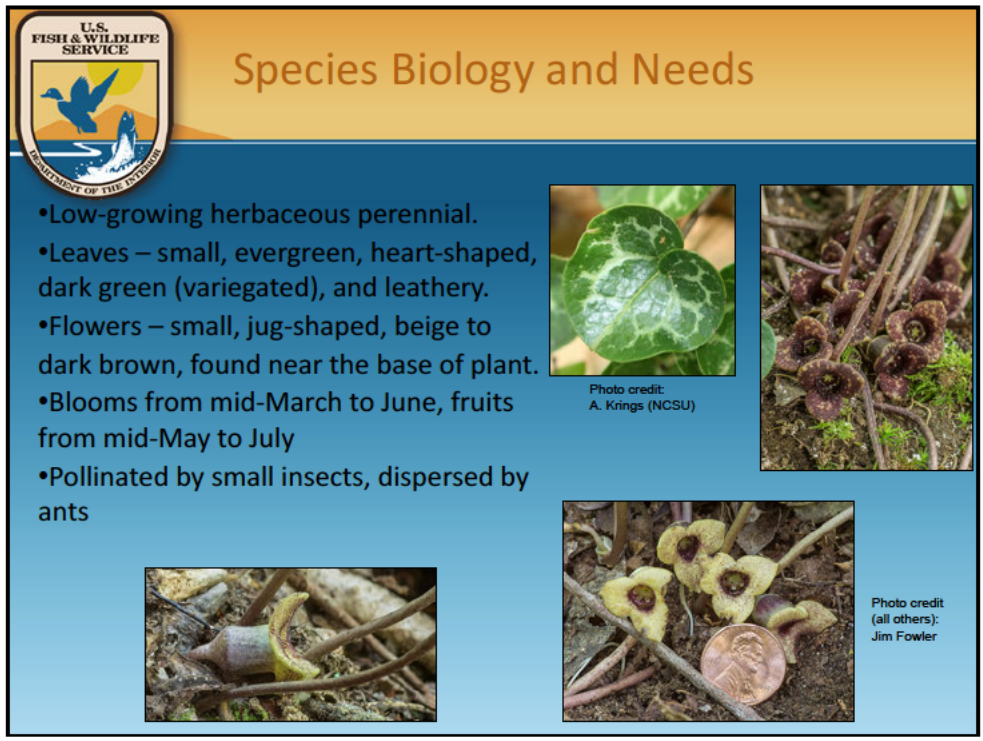
A 5-YR Review was finalized in 2011 (initiated in 2005). Known populations jumped to 108 and the range expanded to 12 counties. (Counties added: NC – Alex, Cald, Ired, Polk). The 5-YR Review recommended working with partners to collect data capable of depicting status and

trends in HENA at focal sites (over 1,000 individuals). As a result, in 2012, the NCNHP initiated a status survey under a USFWS Flex Fund Grant to delineate and monitor some of the largest known populations previously identified by the USFWS to be important for recovery.

This effort produced a Range-wide Status Report, and a Comprehensive Review and Monitoring Report in 2016. The known populations increased to 113 populations and one additional county was added to the range. This included an estimate of approximately 300,000 individuals. (County added: NC – Gast)

The SSA was initiated in 2018 and 6 more populations were added for a total of 119 populations in 13 counties.

Fed government actions began when Section 12 of the ESA directed the secretary of the Smithsonian Institute to prepare a report of those plants considered to be TE or extinct. The report was presented to Congress in Jan of 1975. In July of 1975, the Service published a notice which formally accepted the report as a petition. By doing so, the FWS acknowledged the intention to review the status of those plant taxa named in the report. HENA was included. In June of 1976, the FWS published a proposed rule to determine that 1,700 vascular plants were endangered. HENA was included. The proposal was withdrawn in 1979 as a result of an amendment to the act. Another amendment in 1982 had all prior petitions treated as new. From 1983 to 1987, HENA was warranted but precluded by other listing actions. In 1988 there was a proposal to list HENA as threatened. Listed in 1989.



HENA is a low-growing, herbaceous plant in the Birthwort Family (Aristolochiaceae). Height of the plant rarely exceeds 15cm. The plant can have 1-40+ leaves. Leaves are heart-shaped, dark green with variegation, and leathery. They are 4-5 cm long and supported by a long, thin petiole.

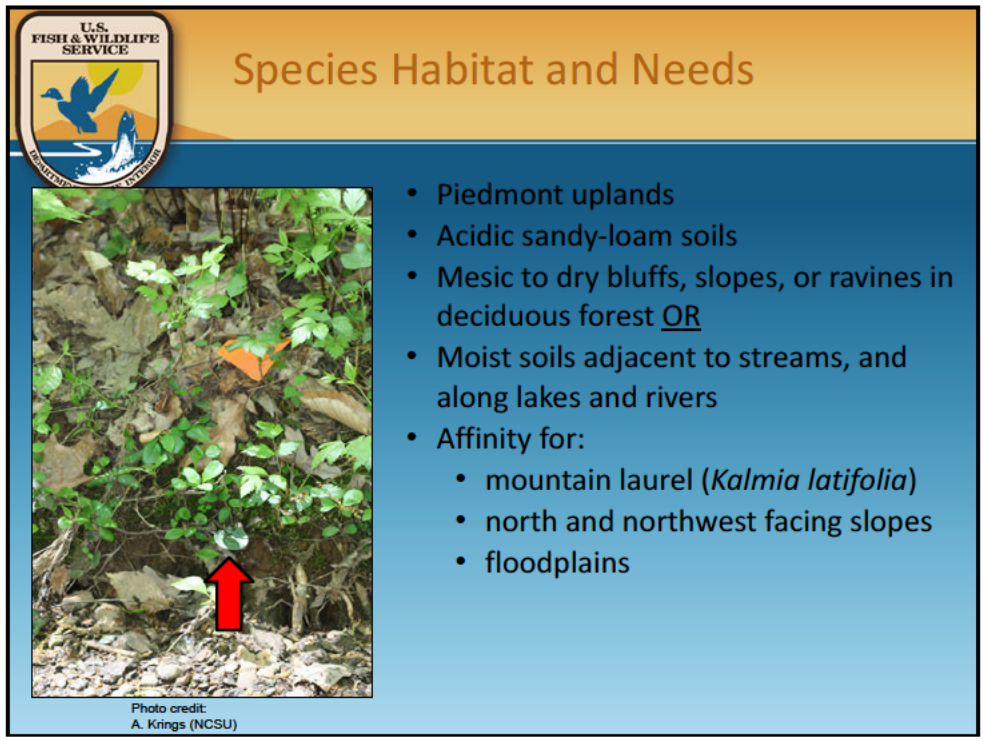
Flowers are clustered at the base of the plant and often covered by leaf litter. They are small and jug shaped with no petals. Flowers have a wide range of coloring from beige to dark brown.

HENA is evergreen and blooms from Mid-March to June. The flower is pollinated by small insects. Fruits are produced from mid-May to July. Studies has shown that ants are one method of seed dispersal.

<u>Other notes</u>
Aristolochiaceae – Birthwort Family – 7 genera and 590 species of mostly tropical woody vines
Common in birthworts – 3-lobed calyx tube with 3 united sepals and no petals, perennial herbs and vines, typically broad leaves with red, purple, or brown flowers, fruit is a dry capsule that releases seeds when ripe
Another example is Dutchman's pipe (Aristolochia macrophylla)
Collectively the sepals are called the calyx. The outermost whorl of parts that form a flower. Sepals typically function as protection for the flower in bud and support petals when in bloom.
3 united sepals form a 3-lobed calyx tube. The calyx tube opening is typically 5mm or less but can be up to 7mm.
Underground rhizome.
Fruits are a dry capsule that releases seeds when ripe.

Not a ton of research done on pollination or dispersal
Ant pollination study Gaddy 1986
Flies, wasps, and thripes – Otte 1977
50% of plant lineage is ant dispersed – Lengyel 2010
Jones 2014 – insects play a significant role but even without them, flowers managed to produce a partial seed set.
The species in the Heterophylla complex are the most closely related and is it recognized that there is considerable morphological overlap (ex. HEHE has a calyx tube 7-14mm).

We are aware of one demographic study that took place from 1990-1991 in Spartanburg County, SC. The study found that there was a survival rate of approx. 96% over the two field seasons with highest mortality occurring in plants with <4 leaves and plants located highest on the slope. Percentage of flowering plants average 70% with the highest frequency of flowering occurring in the floodplain. Additionally, plants located in the floodplain were generally larger than plants located on adjacent slopes.



There are two types of habitat noted within Piedmont uplands with acidic soils – mesic to dry bluffs, slopes, and ravines AND moist soils adjacent to creeks, streamheads, and rivers. Literature indicates an association with mountain laurel, and an affinity for north facing slopes and floodplains.

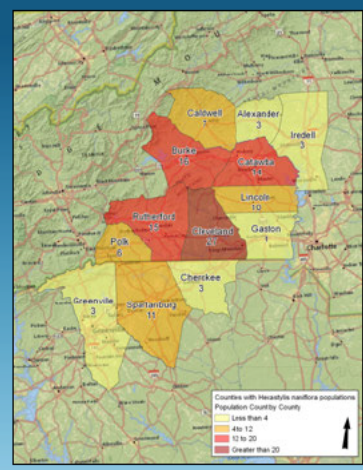
Other notes

Mesic – a habitat containing a moderate amount of moisture.

What we knew about habitat preferences in the beginning changed and expanded as a result of the Habitat Model that we did but this is a list of what we knew when we started.

Species Biology and Needs

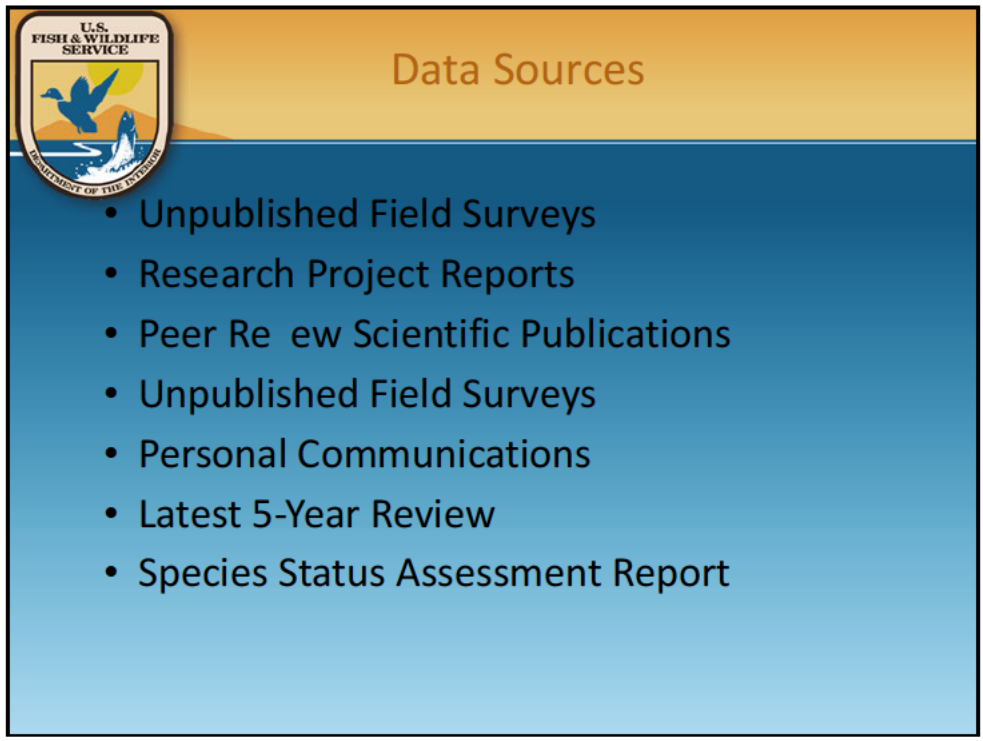
- Distribution
  - – Endemic to the region of western NC and upstate SC
- Historical
  - – 24 extant pops (one extirpated
- Current
  - – 2018, 119 pops across 13 counties in two states



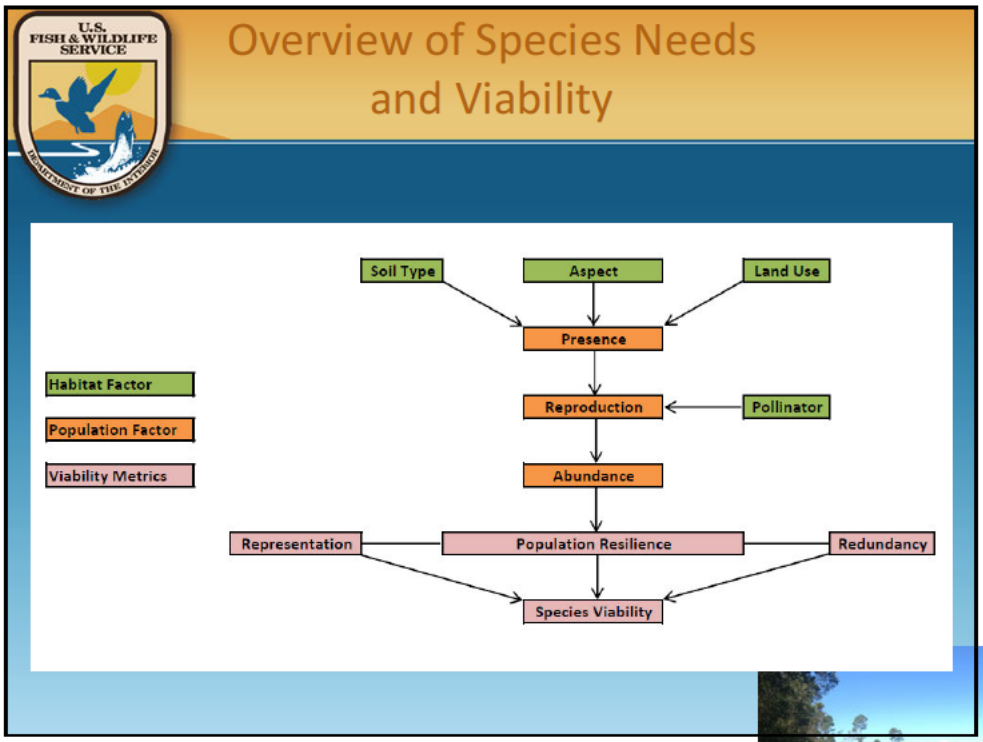
HENA was listed as threatened in 1989. At the time of listing, there were 24 known populations in 8 counties. This included approx. 5,000 individuals. (Counties: SC – Chero, Green, Spart and NC – Clev, Cata, Burk, Ruth, Linc)

The SSA was initiated in January of 2018 and there are now 119 populations in 13 counties totaling more than 300,000 individuals. (Counties added: NC – Alex, Cald, Gast, Ired, Polk).

From "Recommendations for HQ Briefings" - *Map*: where is the species found? Share what we know about its range. Be prepared for questions about whether the species could be found in more places where surveys have not been conducted.



Peer reviewed scientific publications, including research projects
Unpublished field surveys and monitoring reports
Personal communications
Latest 5-year reviews
Natural Heritage Program Reports – monitoring report and range-wide status report
Heritage Programs data
SSA
Habitat Model – Land Cover Data, SLEUTHs data, other habitat factor data (i.e. soils)
USGS National Climate Change Viewer

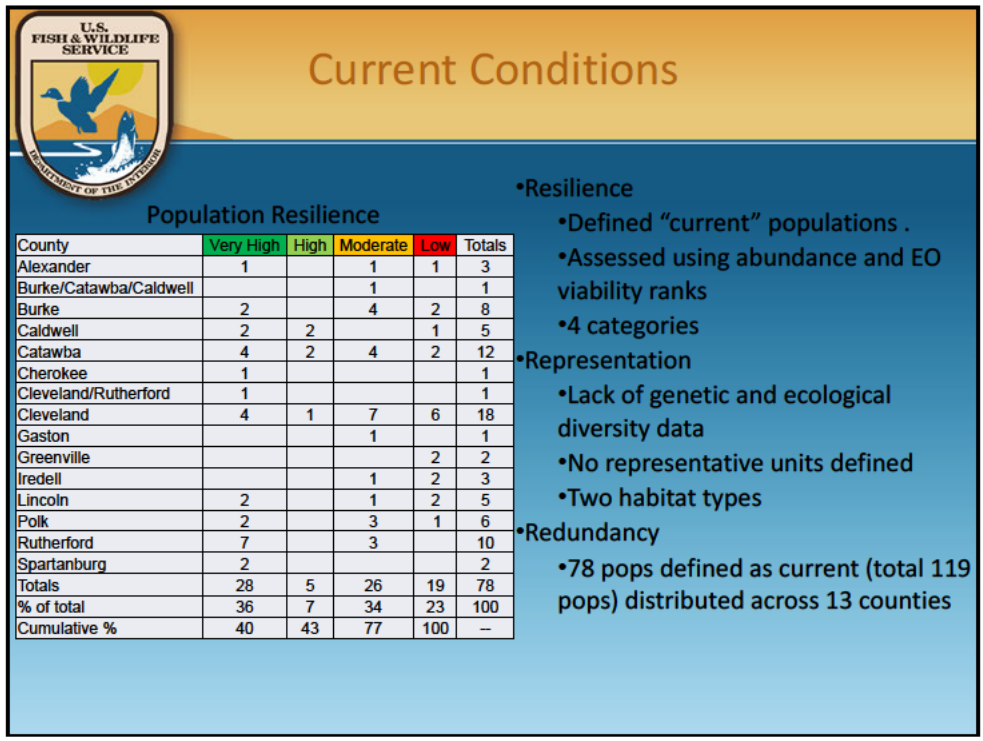




This is a conceptual diagram showing how we get to a resilient population and what the species needs to be resilient. Abundance is the driving factor when we talk about resilience for HENA. If we step that back, abundance requires presence of individuals and reproduction with reproduction requiring the small insect pollinator. Presence is tied back to habitat factors – acidic sandy loam soils, north-northwest facing slopes, and forested land use.

<u>Other notes</u>

This represents what we knew about the species when we started. As mentioned earlier, we learn more about habitat during development of the Habitat Model.



To assess current conditions, the first thing we did was to determine which populations would be included in our analysis. The element occurrence data from the Heritage programs includes a wide range of years since the species was last observed at a given location (1964-2017), data and reports suggest the species consists of 119 populations, but some of that data is outdated and some sites haven't been seen in many years. For the purposes of this SSA, we took a conservative approach and only used element occurrences that were observed since 2005. We picked 2005 because this was consistent with a natural break in the data that coincides with the initiation of the last 5-YR Review and it is consistent with the current populations that were used for the habitat model. So, based on our criteria, there are 78 populations that we define as current for purposes of the SSA. It is important to note that many of the populations that we excluded from our analysis likely still persist on the landscape.

Resilience

To determine overall resilience for populations we defined as current, we used known abundance and viability ranks from Heritage Program data as a starting point. The Heritage Program viability rankings are primarily based on abundance as well, but habitat condition (vegetation community and structure) and landscape context (extent of suitable habitat and physical factors) are also considered. Using the Heritage program data, we developed four resilience ranks from low to very high. The table to the left shows a break down of the 78 populations by County and resilience rank. The bottom of that table shows % totals and cumulative %. 43% of populations are high or very high, and 77% of populations are moderate to very high.

Representation

We do not have the genetic and ecological diversity data to characterize representation for

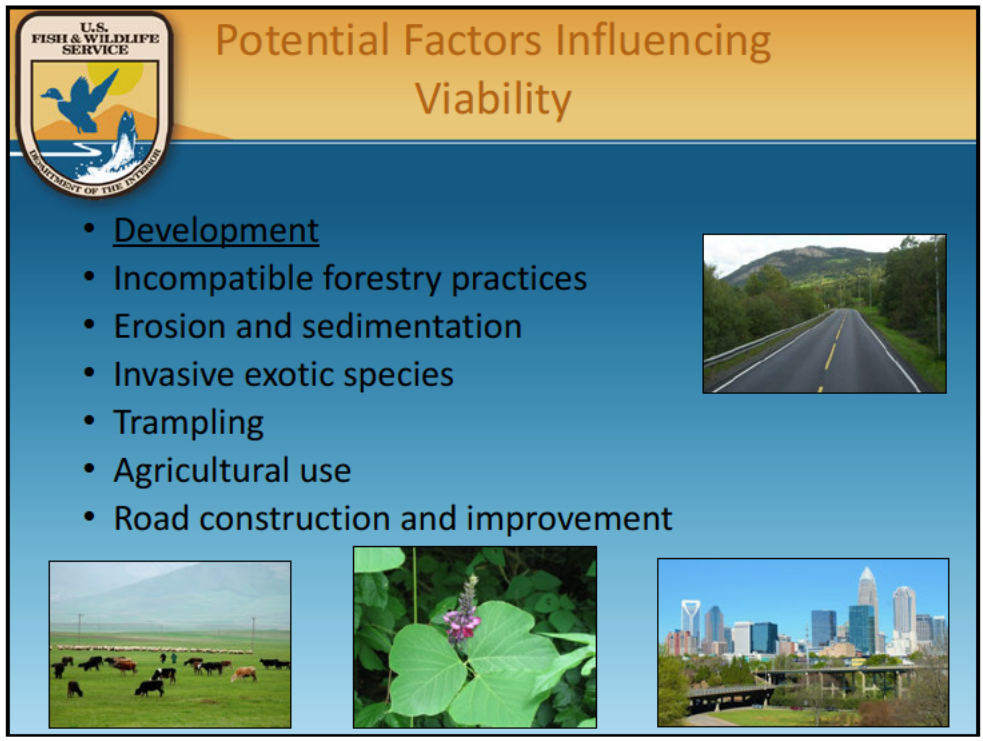
Hexastylis naniflora so we did not delineate representative units for the species. However, we do note that there are two habitat types across the range. One is the mesic to dry bluffs, slopes, and ravines and two is moist soils adjacent to creeks and streams.

Redundancy

Although Hexastylis naniflora is an upper Piedmont endemic, there are 78 populations defined as current distributed across 13 counties and two habitat types. This is a conservative estimate since the Heritage program data identifies 119 populations across the 13 counties observed from 1964 to 2017.

If asked:

Very high—populations with >1,000 individuals; very high probability of persistence for 20-30 years at or above the current population size.
High—populations with 500-1,000 individuals; moderate-high probability of persistence for 20-30 years at or above the current population size.
Moderate—populations with 100-500 individuals; low probability of persistence for 20-30 years at or above the current population size.
Low—populations with <100 individuals; low probability of persistence for 20-30 years at or above the current population size, and moderate-high probability of extirpation.



There are several factors that influence the viability of HENA. Development was listed as the primary threat in the listing package and that is still the primary threat today. A large number of known populations occur near expanding urban areas and are threatened by residential, commercial, and industrial development. Most if not all of the threats listed could be linked back to development.

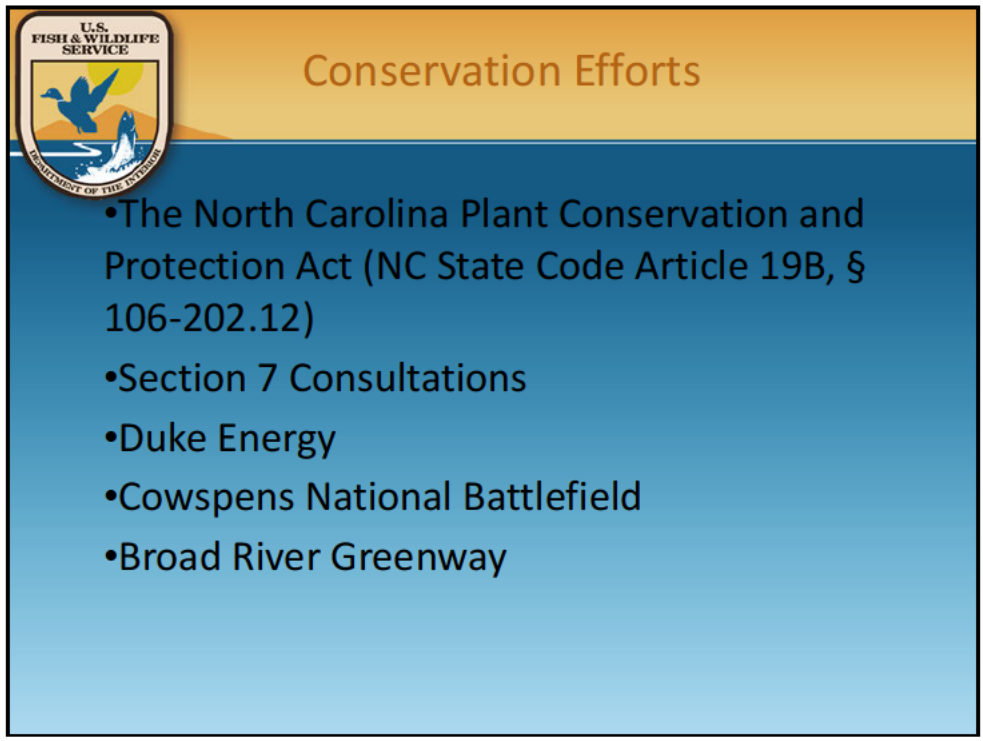
Other notes

Threat of development has either occurred or is reasonably foreseeable in approx. 37% of known population (NCNHP 2010)

Of those populations, all or portions of 50% had been adversely impacted by activities requiring ESA Section 7 consultation with the USFWS

Road and bridge improvement projects are the most recurrent source of habitat destruction

Ten of the 27 largest populations (containing more than 1,000 rosettes) have been the subject of Section 7 consultations between the USFWS and the NCDOT (NCNHP 2010)



Add to list: Registered Heritage Areas, State Heritage Preserves, Conservation Easements, Deed Restrictions.

Protection status for the 78 populations identified as current was determined as a part of the SSA. Twenty-four populations, at least in part, are protected in perpetuity, 18 populations, at least in part, are voluntarily protected or protected but not in perpetuity, 34 populations are not protected, and two populations have an unknown status. Several populations are afforded permanent protection through fee title ownership by conservation partners. These sites include NCDOT mitigation sites at Murrays Mill and the Broad River Greenway. Other sites in permanent protection include the Catawba Lands Conservancy's Rhyne Preserve, the Cleveland County Landfill, Cowpens National Battlefield, and Peters Creek South Carolina State Heritage Preserve. NCNHP holds four voluntary Registry Agreements with private landowners for the purpose of protecting *Hexastylis naniflora*. These sites are the Parris Heartleaf Registered Heritage Area (RHA), the New Hope Springhead (Barefield) RHA, the Catawba County Wildlife Club RHA, and the Smith Cliff/Henry Fork RHA. Some populations are protected through conservation easements held by various partners. These include populations at the New Bethel Rare Plant Site, held by NCDOT. The Foothills Conservancy of NC holds a conservation easement at Peaked Top Rare Plant Site, and The Nature Conservancy holds a conservation easement at Jacob Fork West Corridor.

NC Plant Conservation and Protection Act and SC State Code of Regulations Part 123§200-204. The North Carolina Plant Conservation and Protection Act (NC State Code Article 19B, § 106-202.12) provides limited protection from unauthorized collection and trade of plants listed under that statute. However, this statute does not protect the species or its

habitat from destruction in conjunction with development projects or otherwise legal activities. Plant species are afforded even less protection in South Carolina, where they are protected only from disturbance where they occur on those properties owned by the state and specifically managed as South Carolina Heritage Preserves (SC State Code of Regulations Part 123 § 200-204).

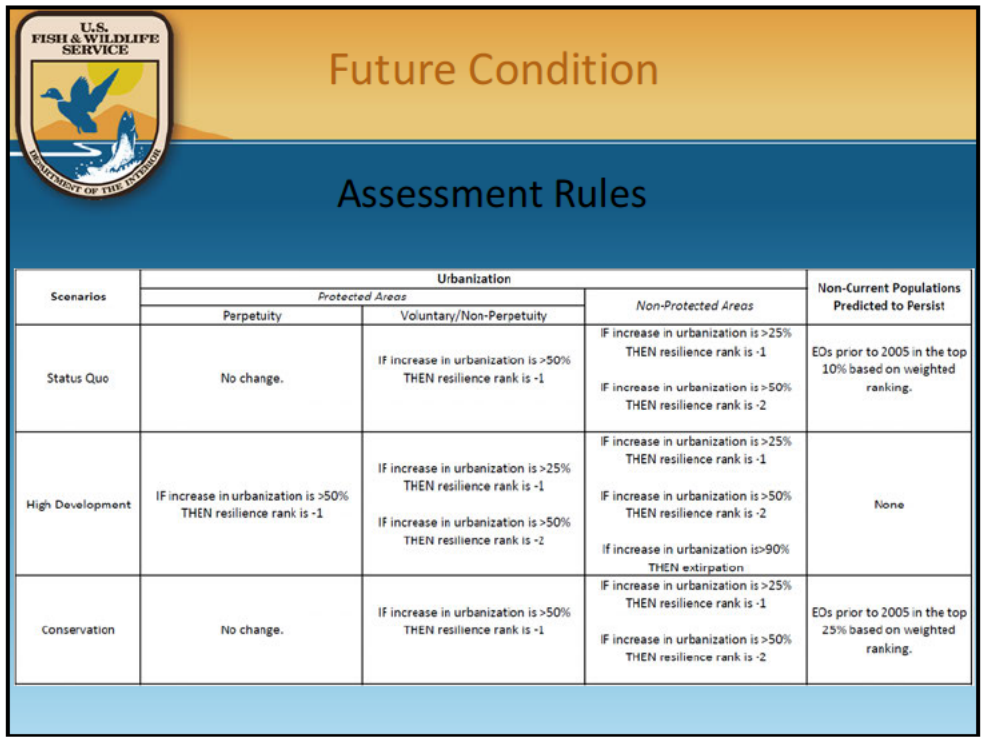
Future Conditions

- Development of Future Scenarios
  - Primary threat = Development
  - Persistence of populations (pre-2005)
  - Assessment to 2040
- Three Scenarios
  - Status Quo
  - High Development
  - Targeted Conservation



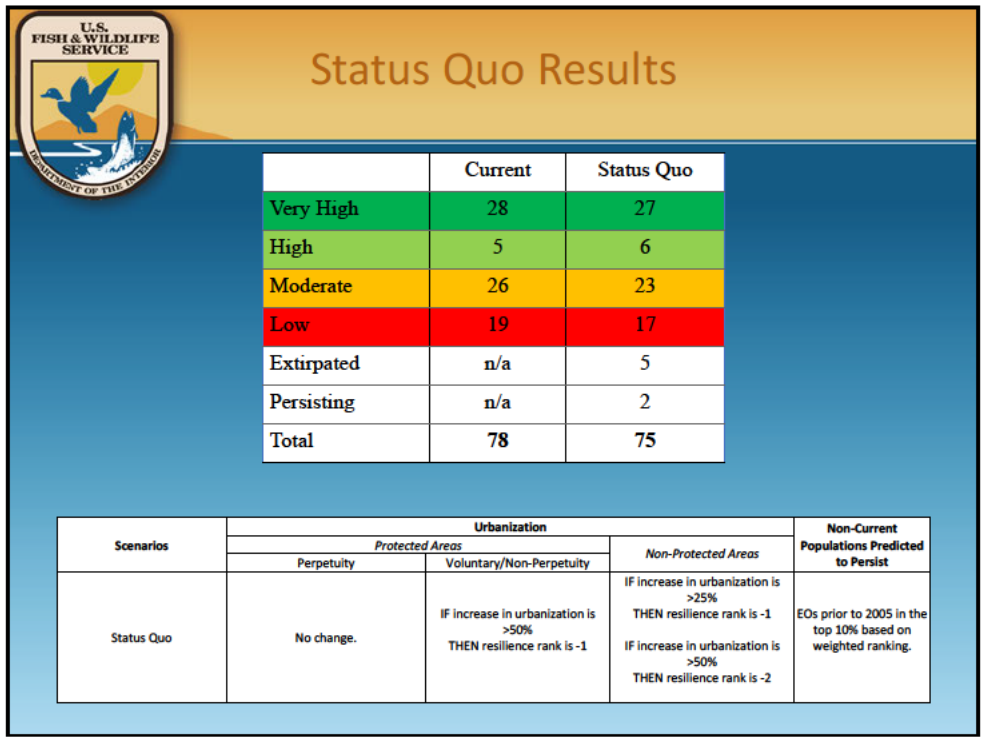
In developing our future scenarios, we wanted to make sure we addressed development and urbanization since that is the largest threat to the species. Because populations are known to persist for many years, we wanted to also estimate the number of populations, not defined as current, that are still on the landscape. We chose an assessment timeframe to 2040 – this was chosen based on what we know about longevity of the species, expert input, precision of predictive models that show future development, and uncertainty about future conditions.

The three scenarios are: Status Quo, High Development, and Targeted Conservation. We believe that these three scenarios represent a range of possibilities that capture uncertainty about the future.



Scenarios	Urbanization			Non-Current Populations Predicted to Persist
	Protected Areas		*Non-Protected Areas*	
	Perpetuity	Voluntary/Non-Perpetuity		
Status Quo	No change.	IF increase in urbanization is >50% THEN resilience rank is -1	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2	EOs prior to 2005 in the top 10% based on weighted ranking.
High Development	IF increase in urbanization is >50% THEN resilience rank is -1	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2 If increase in urbanization is>90% THEN extirpation	None
Conservation	No change.	IF increase in urbanization is >50% THEN resilience rank is -1	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2	EOs prior to 2005 in the top 25% based on weighted ranking.

Here are our assessment rules for each scenario. These are generally set up as IF-THEN statements. We assume that there will be a range of impacts from urbanization that are related to the % increase in urban development and we assume that a few populations will be persisting on the landscape depending on the scenario. So, if there is a certain % increase in urbanization/development, then resilience decreases by a certain amount.



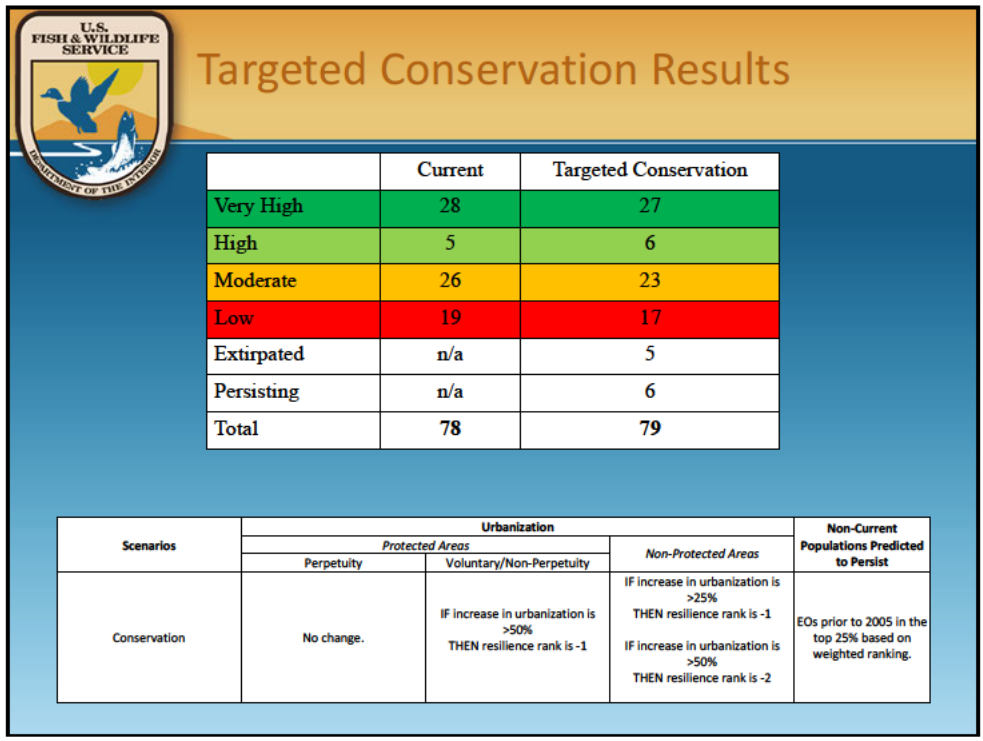
For the Status Quo scenario, we assumed there is no change in resilience for sites protected in perpetuity, we assumed a drop in resilience category if voluntarily protected sites and non-protected sites reached the thresholds in the table. And, we assumed that only those non-current populations that ranked in the top 10% of our ranking would be persisting on the landscape. The results are shown in the table. This scenario results in 5 extirpations and 2 persisting populations for a total of 75 populations in 2040.

High Development Results

	Current	High Development
Very High	28	27
High	5	4
Moderate	26	25
Low	19	16
Extirpated	n/a	6
Persisting	n/a	0
Total	**78**	**72**

Scenarios	Urbanization			Non-Current Populations Predicted to Persist
	Protected Areas		*Non-Protected Areas*	
	Perpetuity	Voluntary/Non-Perpetuity		
High Development	IF increase in urbanization is >50% THEN resilience rank is -1	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2 If increase in urbanization is>90% THEN extirpation	None

For the High Development scenario, we assumed a drop in resilience category if any sites reached the thresholds in the table. And, we assumed no non-current populations would persist on the landscape. This scenario results in 6 extirpations for a total of 72 populations in 2040.



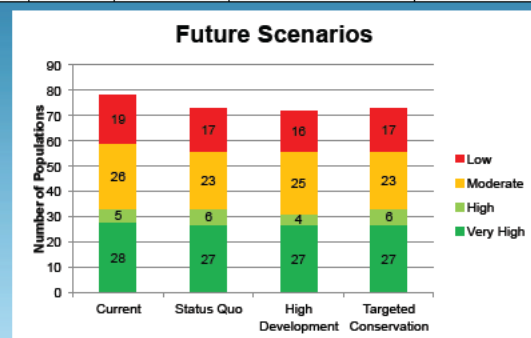
	Current	Targeted Conservation
Very High	28	27
High	5	6
Moderate	26	23
Low	19	17
Extirpated	n/a	5
Persisting	n/a	6
Total	**78**	**79**

Scenarios	Urbanization			Non-Current Populations Predicted to Persist
	Protected Areas		*Non-Protected Areas*	
	Perpetuity	Voluntary/Non-Perpetuity		
Conservation	No change.	IF increase in urbanization is >50% THEN resilience rank is -1	IF increase in urbanization is >25% THEN resilience rank is -1 IF increase in urbanization is >50% THEN resilience rank is -2	EOs prior to 2005 in the top 25% based on weighted ranking.

For the Targeted Conservation scenario, we assumed the no change in resilience for sites protected in perpetuity, we assumed a drop in resilience category if voluntarily protected sites and non-protected sites reached the thresholds in the table. And, we assumed that only those non-current populations that ranked in the top 25% of our ranking would be persisting on the landscape. The results are shown in the table. This scenario results in 5 extirpations and 6 persisting populations for a total of 79 populations.

Viability Summary

	Current	Status Quo	High Development	Targeted Conservation
Very High	28	27	27	27
High	5	6	4	6
Moderate	26	23	25	23
Low	19	17	16	17
Extirpated	n/a	5	6	5
Persisting	n/a	2	0	6
Total	**78**	**75**	**72**	**79**



This is a table that shows all scenarios. The chart shows the data represented graphically.

Urban development is predicted to have negative impacts on several of the current populations under all of our scenarios and all scenarios have extirpations. However, the loss of resilience and extirpations is offset by several populations were found to persist in the Status Quo and Targeted Conservation scenarios. In all scenarios, the majority of the populations in 2040 are of at least moderate resilience.

Given the number of populations across each scenario, redundancy remains similar to current conditions.

Although we did not delineate representative units, we do not believe the scenarios predict declines in species representation because the populations in each scenario occur in both habitats known for the species.

Questions?

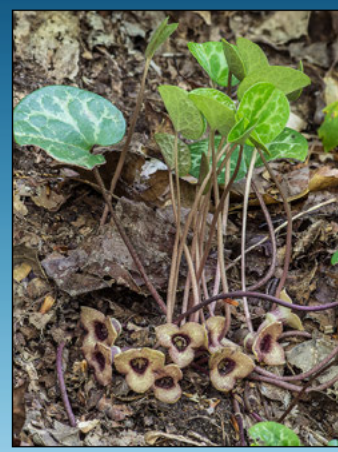


Photo credit: Jim Fowler


U.S.
FISH & WILDLIFE
SERVICE
DEPARTMENT OF THE INTERIOR

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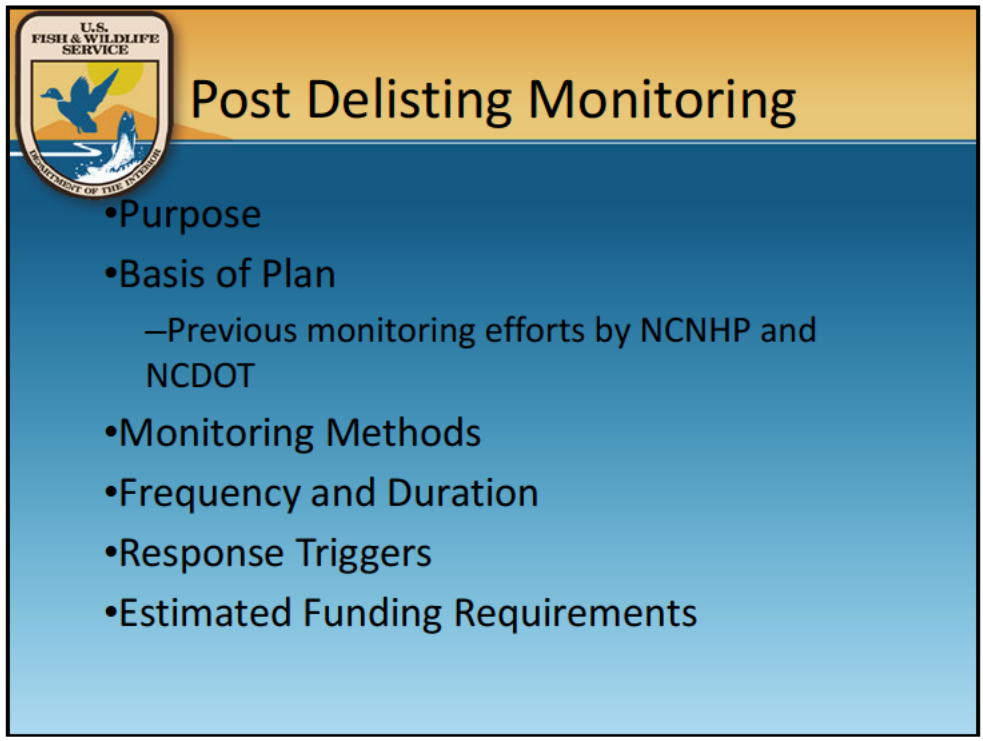
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Gary Peeples. Media release has been drafted (in May).



Purpose – The purpose of the post-delisting monitoring plan is to verified that dwarf-flowered heartleaf doesn't become at risk of extinction after protections of the Act have been removed.

Basis of Plan - We prepared this plan with input from the North Carolina Natural Heritage Program (NCNHP) and the North Carolina Department of Transportation (NCDOT) and the plan is based largely on monitoring methods developed in 2012 during a field coordination meeting with NCNHP, NCDOT, and the Service. NCNHP and NCDOT have monitored 25 of the largest populations for at least five years to collect baseline data.

Monitoring Methods – Plots or complete census. For plots, each monitored population will be delineated with a GPS, randomly established plots from 2012 will be revisited (plots established to cover approx. 10% of the population), counts will be extrapolated to determine an estimate population size. For small sites where it is practical, a complete census will be done.

Frequency and Durations – Monitoring will begin during the first full growing season (March – May) following the publication of a final. Monitoring will occur within at least 12 of the 25 previously monitored populations. Monitoring will be conducted on a two-year cycle in which at least 6 sites are monitored each year for six years (each site receives three complete monitoring cycles).

Response Trigger - After a monitoring period of six years, all years of data, including baseline data from 2012-2016, will be analyzed for trends and factors that may be influencing the population (e.g., threats). From this analysis, it will be possible to categorize observations into one of three possible outcomes which will guide the path forward – stay the course; extend

monitoring period and increase monitoring intensity, implement management; or initiate a formal status review to determine if relisting is appropriate.

Estimated Funding Requirements – Currently, NHP estimates 6 years of monitoring for 12 sites (each cycle is 2 years and 6 sites) would be $36,600. DOT could not provide a cost estimate for 6 years and 12 sites but indicated if would be significantly higher than the NHP estimate.



Climate Change – To assess the effects of climate change on HENA, we used the USGS National Climate Change Viewer –this viewer takes the full datasets of 30 climate models and scales it down to a county level in the US. It also uses two different greenhouse gas emission scenarios – we chose to use the more extreme of the two (representative concentration pathway 8.5, which assumes emission will continue to rise uncheck through the end of this century leading to an equivalent radiative force of 8.5 watts per meter squared). Using the tool we calculated projected mean changes comparing 1981-2010 to 2005-2049 for max temp, precipitation, soil storage, and evaporative deficit. And, we did this for all counties were HENA occurs. Results – all counties will be subject to higher temperature (annual mean inc of 2.9F), slightly higher precipitation (annual mean increase of 0.2 inches per month), and slight decrease in soil storage (annual mean decrease of 0.1 inch), no change in evaporative deficit. Because the average annual increase in precipitation is predicted to be only slightly higher, the loss in soil storage is likely primarily the result of higher predicted temperatures.

Although climate change could negatively impact HENA, the species has traits that help it be resilient.
-Long-lived species – two studies that compare life-history traits and vulnerability of plants in relation to climate patterns concluded that long-lived species should be less influenced by climate-driven increases in demographic variability.
-There is evidence that seeds are disperse by ants. Ants can disperse seeds to new locations where habitat may be better and ants are known to bury seeds – which some studies have shown to protect them from fire and drought – two conditions made worse by climate change.
-Apparent tolerance to fire – a wildlife, presumably brought on by or at least made worse by drought, burned portions of one of the largest known populations in 2009. Later observations suggest that the species wasn't harmed by the fire. Additionally, the NPS is using prescribed

fire to manage sites at Cowpens NB. Monitoring data there shows that burning has had no adverse effects of growth or flowering.
-Habitat variability – two known and varied habitats (dry bluffs and slopes, and moist soils adj to streams). The variation provides species representation in drier and wetter habitat. This shows the species ability to adapt to different environmental conditions that could be brought on by climate change.

We know that climate change is almost certain to affect HENA and habitat in NC and SC, but we are uncertain about specific effects. Based on what we know and traits mentioned, we have no direct evidence that climate change has had an adverse impact to date and we don't believe it will be a significant threat in the future.

Invasive Species - Invasive, exotic plants were identified as a threat at the time of listing; however, the threat may not be as significant as once thought. The NCNHP monitored 13 populations of *Hexastylis naniflora* and assessed threats at each population. Their results show that, of monitored sites, only 9 percent of populations (one of 11) where invasive, exotic species are present are also in decline, indicating the species has at least some capacity to withstand the presence of invasive, exotic species. The invasive, exotic plant threat posed at many of the largest populations is low (NCNHP 2016, pp. 8, 17–20); and the number of populations under conservation ownership with management has increased.
Therefore, we do not believe that competition from invasive, exotic species will be a significant threat in the foreseeable future.

[Invasive, exotic plant species occur across the range of this species. Plants such as English ivy (*Hedera helix*), Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), and Japanese stiltgrass (*Microstegium vimineum*)are known at several sites that contain *Hexastylis naniflora* (Service 2011, p. 15). Invasive, exotic species were identified as a threat at 8 of 10 North Carolina populations monitored by NCNHP (Robinson and Padgett 2016, pp. 17–19). The eight populations include four stand-alone EOs and four parent EOs with 19 sub-EOs. Of the four stand-alone EOs, one has an invasive threat rank of B (moderate to severe, imminent threat for a significant portion (20–60 percent) of the population, occurrences, or area), two have a rank of F (low severity threat for most or a significant proportion of population, occurrences, or area), and one has a rank of G (low severity threat for a small proportion of population, occurrences, or area). Of the 19 sub-EOs, 9 have invasive, exotic species identified as a threat. Of the nine sub-EOs, one has an invasive threat rank of A (moderate to severe, imminent threat for most (more than 60 percent) of population, occurrences, or area), four have a rank of B (moderate to severe, imminent threat for a significant portion (20–60 percent) of the population, occurrences, or area), two have a rank of E (moderate to severe threat for a small proportion of population, occurrences, or area), and two have a rank of G (low severity threat for a small proportion of population, occurrences, or area). The one stand-alone EO and five sub-EOs with the highest threat ranks (A and B) are located in three populations. Based on the most recent monitoring data, one is increasing, one is stable, and one is decreasing (Robinson and Padgett 2016, p. 11).

Invasive, exotic species were identified as a threat at all (three) South Carolina populations monitored by NCNHP, and all sites had an invasive threat rank of F (low severity threat for most or a significant proportion of population, occurrences, or area) (Robinson and Padgett 2016, p. 20). Based on the most recent monitoring data, all populations are stable (Robinson

and Padgett 2016, p. 11).

In short, the data indicate that *Hexastylis naniflora* populations can persist and increase in the presence of invasive, exotic species. Despite the long-term presence of invasive, exotic plants, from 2012 to 2016, there were no changes in the severity of threats observed in the field from these species significant enough to elevate the threat ranks of *Hexastylis naniflora* populations evaluated (NCNHP 2016, p. 8).]

Development – Three tools used to evaluate the three scenarios…Maxent, SLUETH, additive weighting. Development is predicted to have a negative impact on several current populations under all scenarios. However, the majority of populations evaluated are expected to remain on the landscape in 2040 at a level of at least moderate resiliency. Given the high numner of populations across each scenario, redundancy remains similar, and although we did not define representative units we will expect species to be present in varied habitats across the range.

From: Bert Pittman
To: Reid, Rebekah N
Cc: Herrick Brown
Subject: RE: [Scpca] Hexastylis naniflora in SC
Date: Wednesday, November 29, 2017 3:19:23 PM
Importance: High

Rebekah

The Columbia office of the Heritage Program has not been involved with the species in some time. That would have been Mary Bunch, preserve manager, in the Clemson office. She is now retired and replaced by Pat Cloninger. CloningerP@dnr.sc.gov . I think the new tract Herrick is referring to may be under negotiation which typically remains confidential until acted upon by the SC Heritage Trust Board. Pat can advise.

Bert

Albert B. Pittman, Ph.D.
Botanist
Heritage Trust Section
SC Dept. of Natural Resources
P.O. Box 167, Columbia, SC 29202
1000 Assembly St., Columbia, SC 29201
office: 803-734-3920 fax: 803-734-9200

From: Herrick Brown
Sent: Wednesday, November 29, 2017 2:37 PM
To: Reid, Rebekah <rebekah_reid@fws.gov>
Cc: Suiter, Dale <dale_suiter@fws.gov>; Bert Pittman <PittmanB@dnr.sc.gov>; Kathy Boyle <BoyleK@dnr.sc.gov>; 'April Punsalan' <april_punsalan@fws.gov>; amy Blackwell <amyblackwell@me.com>
Subject: RE: [Scpca] Hexastylis naniflora in SC

Rebekah,

Jill (Gillian) Newberry formerly of USC Upstate in Spartanburg was quite active with this species. There was some recent activity involving property outside of Travelers Rest, SC and adjacent to Blackwell and Bunched Arrowhead preserves that involved some scrutiny for occurrences of this species. Indeed we found the answers on some specimens at USCS available here: http://sernecportal.org/portal/collections/list.php?taxa=Hexastylis%20naniflora&thes=1&type=1&state=south%20carolina&db=all&page=1

I've granted your user account permission to view all of the details and the specimen images where

you'll see the coordinate values (on some as the metadata are not fully developed on many).

I can work to get you what SC Heritage has so far in Biotics for this species.

Also, you might try Zack Murrell at App State U, I know he has had an interest in this species and you may be able to convince him to fast track the digitization of any specimens he has (they don't currently appear to be available in the SERNEC portal).

Best,
Herrick

Herrick Brown - Assistant Botanist
SC Dept. of Natural Resources
Heritage Trust Program
P. O. Box 167, Columbia, SC 29202
1000 Assembly St., Columbia, SC 29201
office: 803-734-4320 fax: 803-734-9200
BrownH@dnr.sc.gov

DNR protects and manages South Carolina's natural resources by making wise and balanced decisions for the benefit of the state's natural resources and its people. Find out more about DNR at www.dnr.sc.gov

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca <scpca@lists.fws.gov>
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the following would be very helpful:

- Who is working on H. naniflora in SC? And, what have you been up to?
- Does anyone have information on the following sites:

  Cherokee Creek near Cowpens (last Heritage update 2004)

  Spartanburg Water System Preserve (last Heritage update 2001)

  Claggett site in Raintree subdivision (last Heritage update 1991)

  UT to Spivey Creek (last Heritage update 1991)

Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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From:	Frank Holleman
To:	Reid, Rebekah N
Cc:	Punsalan, April L; "Naturaland Trust" (macstone@naturalandtrust.org); Jeff Beacham (jeffbeacham@gmail.com); lisajlord1@gmail.com
Subject:	RE: [Scpca] Hexastylis naniflora in SC
Date:	Thursday, November 30, 2017 11:03:39 AM
Attachments:	USFWS File on Boulder Creek Hexastylis naniflora.pdf
Importance:	High

Rebekah,

I'm the President of Naturaland Trust, the land trust in Greenville that works to protect special places in the SC Piedmont and SC's Blue Ridge Mountains. We are interested in Hexastylis naniflora and seek to protect properties that include it. I'm also a volunteer with the SC Native Plant Society. I'm copying Jeff Beacham, the former state president, because, as set out below, he and I have worked on a couple of projects involving it, and also our current state president, Lisa Lord. I'm also an attorney with the Southern Environmental Law Center, and sometimes the various projects overlap.

Here are some projects we've been involved in:

1. Peters Creek. Naturaland Trust acquired a parcel (about one acre, as I recall) that bisected the trail and the creek in the Peters Creek Heritage Trust Preserve, to protect the Preserve. We have not thoroughly checked that property, but we aren't aware of any HN on it.

2. We are currently working with SC DNR to try to acquire property next to the Blackwell Heritage Trust Preserve in Travelers Rest, SC. That preserve was established to protect the bunched arrowhead. There was a proposal to intensively develop an adjacent 56 acres. That proposal has now been withdrawn, and DNR has applied for a USFWS grant to acquire the property. We have found HN on that property, as well as bunched arrowhead. The Heritage Trust manager for our area has surveyed the property and has a count of the HN populations on that property.

   In addition, there is property adjacent to the Preserve and the proposed development property owned by a conservation-minded person, Johnny Stone. Some years ago, he enrolled some of his property in the Heritage Trust Program because of the presence of bunched arrowhead. We found HN on his property, in addition to the bunched arrowhead, and in close proximity to it.

   We did not survey the Blackwell HTP for HN, but it is possible there are some HN populations on the existing HTP.

3. Jeff Beacham and I and others have worked to try to deal with the storm water on the site of Gateway Elementary School in Travelers Rest. The campus of that school includes an undeveloped woodland that is braided with seeps and streams, which include the bunched arrowhead. Stormwater has impacted the bunched arrowhead in the woodland. We have found HN on that property, as well.

4. In the course of checking on mitigation activities in the area for SELC, I ran across a subdivision in Greer, Boulder Creek, where the developer was required to put aside land because of the presence of HN on it. Jeff and I have met with the Homeowners Association and visited the site. There are populations of HN on the property, and the properties in question have been put aside. The HOA was unaware of the plants, however, until we contacted them and met with them. The mitigation requirements required the developer to put in place a plan with the HOA for the long term protection of the plant, which had not been done. I am sure the HOA would be happy for you to come and see the plant.

   This mitigation was done under a Biological Opinion for HN done by the USFWS. It would be good if you could survey the USFWS records for any other BiOps for HN, and we could check on their status, too. Attached are some of the documents related to this one.

   There are also other plants on neighboring properties upstream and downstream of these mitigation properties. I wrote the property owners seeking to purchase those portions, but have never heard back. If you wanted to pursue them, that would be great, too!

5. Finally, if you know of any other opportunities to preserve and protect populations of this plant, let us know. We would be happy and pleased to work with you on the effort. I am particularly interested in the subdivision populations you mentioned. If you could send me information on those sites and if they are in our area, we could visit them and see what's up. There may be opportunities to protect the plants and/or acquire properties for protection.

Frank S. Holleman III
President
Naturaland Trust
148 River Street, Suite 110
Greenville, South Carolina 29601
(864) 979 9431
FrankHolleman@naturalandtrust.org

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

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- Does anyone have information on the following sites:

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  UT to Spivey Creek (last Heritage update 1991)

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- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

April 11, 2006

FILE

Ms. Laura Belanger
Environmental Permitting Consultants
PO Box 3744
Greenville, SC 29608

Re: Boulder Creek Subdivision
Greenville County, South Carolina
FWS Log No: 2006-I-0420

Dear Ms. Belanger:

The U.S. Fish and Wildlife Service (Service) has reviewed the proposal for Boulder Creek (Jordan Road) Subdivision. The subject property is located on Jordan Road in Greenville County, South Carolina. The following comments are provided in accordance with section 7 of the Endangered Species Act (Act), as amended (16 U.S.C. 1531-1543).

Extant populations of the endangered *Hexastylis naniflora* have been identified on the proposed property along two of the creeks within the project boundary. No direct impacts to the population are anticipated. The developers of this site are aware of the H. naniflora population and assume responsibility for maintaining suitable habitat conditions for the species. As per our discussion on the March 27, 2006, site visit and follow-up letter from Laura Belanger dated March 28, 2006, a 25-foot protective buffer will be fenced and maintained in restrictive covenant to protect both populations. Twice annual monitoring will be conducted for the two years of construction, with monitoring reports submitted to the Service's Charleston Field Office. At the completion of construction, the final monitoring report will include detailed information regarding long-term monitoring and protection plans of the two *Hexastylis* populations.

Based on information provided, proposed conservation measures for the on-site population of *Hexastylis naniflora*, it is the opinion of the Service that the proposed action is not likely to adversely affect listed species.

Your interest in ensuring the protection of endangered species is appreciated. If you have further questions or require additional information, please contact Lora Zimmerman of this office at (843) 727-4707 ext. 226. In future correspondence concerning this project, please reference FWS Log No. 2006-I-0420.

Sincerely,

Catherine D. Duncan
Acting Field Supervisor

CDD/LLZ

cc:

Mr. Les Parker, USACOE, Columbia, SC

RECEIVED MAR 3 1 2006

Environmental Permitting Consultants, Inc.

US Fish and Wildlife Service
Charleston Field Office
176 Croghan Spir Road
Suite 200
Charleston, SC 29407

March 28, 2006

Attention: Lora Zimmerman

Dear Ms. Zimmerman,

This letter is in regards to the Boulder Creek NWP permit application submitted to Les Parker at the US Army Corps of Engineers January 30, 2006. The property contains two populations of *Hexastylis naniflora*. The first population is located in the far southwestern corner of the property and the second population is located near the southernmost property boundary.

As per our site meeting on March 27, 2006, propose to do the following:

- Place a 25 foot protective buffer around each population of *Hexastylis naniflora.*
- Include these buffered areas in the restrictive covenants proposed for the project.
- Place protective fencing around the populations of *Hexastylis naniflora.*
- Monitor the populations for two years, submitting to FWS four letter reports with photos documenting the populations.
- Upon completetion of construction and formation of the Homeowners Association, hosting a meeting with the Homeowners Association making them aware of the *Hexastylis naniflora* populations, potential impacts to the populations and how they can be avoided, and the terms of the restrictive covenants.

The populations and their approximate locations are provided in Figure 2 of the Protected Species Habitat Assessment preformed by Environmental Permitting consultants in January 2006. Please feel free to contact me (864) 271-3040 regarding any questions or concerns.

Sincerely,

Laura H. Belanger

Laura H. Belanger

Cc: Chip Fogleman, Fant Reichert & Fogleman, Inc.
Les Parker, USACE
Jed Aho, Midland Builders

P.O. Box 3744 • Greenville, South Carolina 29608 • (864) 271-3040 • Fax (864) 235-9299
P.O. Box 2346 • Hendersonville, North Carolina 28793 • Phone/Fax (828) 891-8414

PHONE LOG

FWS Contact: Morgan Wolf **Date:** 7/8/13

Time: 10:25 am

File No. 2006-I-0420

Received From: M. Wolf
Call Made To: Launa Belanger

Organization: EPC

Telephone #: 864-271-3040

Subject: Boulder Creek Subdivision, Ft. Hamilton pop'n. Greenville, SC

Discussion: Launa stated that the last contact EPC had w/ the builders (Midland Inc) or Midland Builders regarding this project was May 21, 2012, when they sent a monitoring proposal for Ft. Hamilton to the builders. She is not sure if they contracted w/ someone else to do the monitoring & restrictive covenants.

- Launa gave Midland contact as Jed Aho (-) FAX 864-848-7173
- I have researched Midland Builders and Midland Inc.; & Les Parker - Corps Contact cannot find a working telephone number

▷ but as of NOV 25, 2012, the development has been built.

- Last address/phone = 514 E North street, Greenville, SC 29601 / 864-[illegible] 5997

3:55 pm - spoke w/ Les Parker; he remembers project & will try to locate monitoring reports & restrictive cov.

Signature:

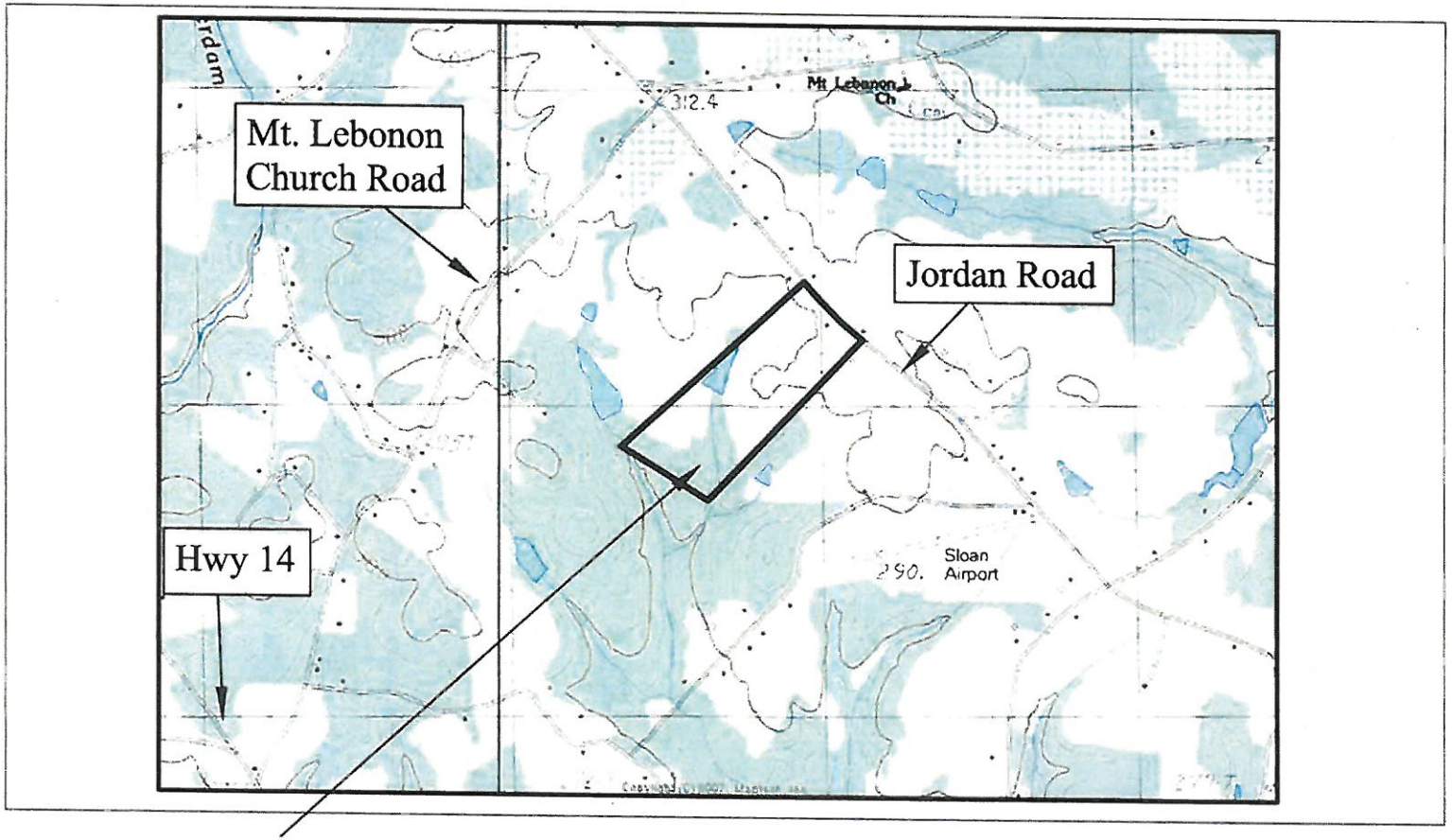
Img 11/05/12 printed 11/8/13 MKW



Google earth

feet 1000

meters 500



Source: USGS Topographic Series, Paris Mt. Quadrant
Greenville County, South Carolina

hear

Silver Jeep Liberty
828-553-9548

ENVIRONMENTAL PERMITTING CONSULTANTS, INC.	GRAPHIC SCALE 500 0 500 1000 1 inch = 1000 feet	REVISIONS NO. / DRAWN BY: / COMMENTS:	Boulder Creek Site Location Midland Builders Greenville County USACE P/N:.	SHEET NO. 1 OF 1

Post Office Box 3744
Greenville, SC 29608
Phone: (864) 271-3040
Fax: (864) 235-9299

DRAWN BY: lhb
DATE: 23jan2006
EPC PROJECT NO.: 05pcn131

→ How far off the stream are the plants?
How wide of a buffer do we need to put in basement?

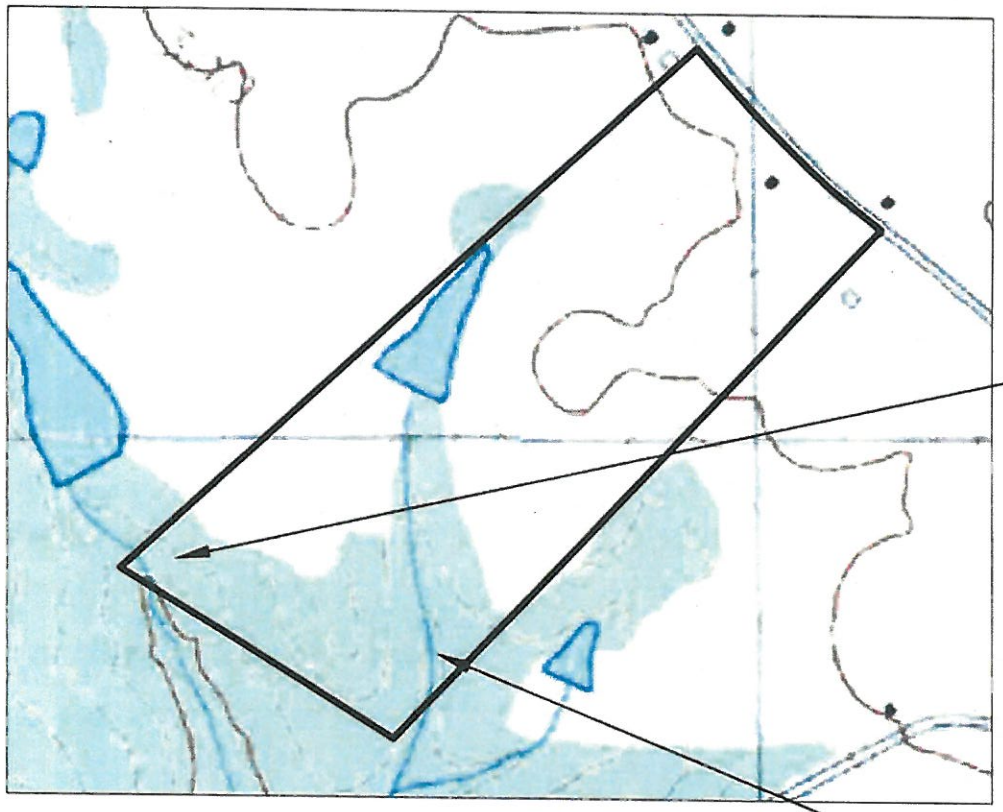
→ Plants will not be w/in lot lines

→ Annual monitoring reports during construction & beyond including habitat conditions & stem count.

→ will fence

→ 10 ft. buffer from plants
walking trails
plants/native vegetation
remove dead & down

Nationwide 39

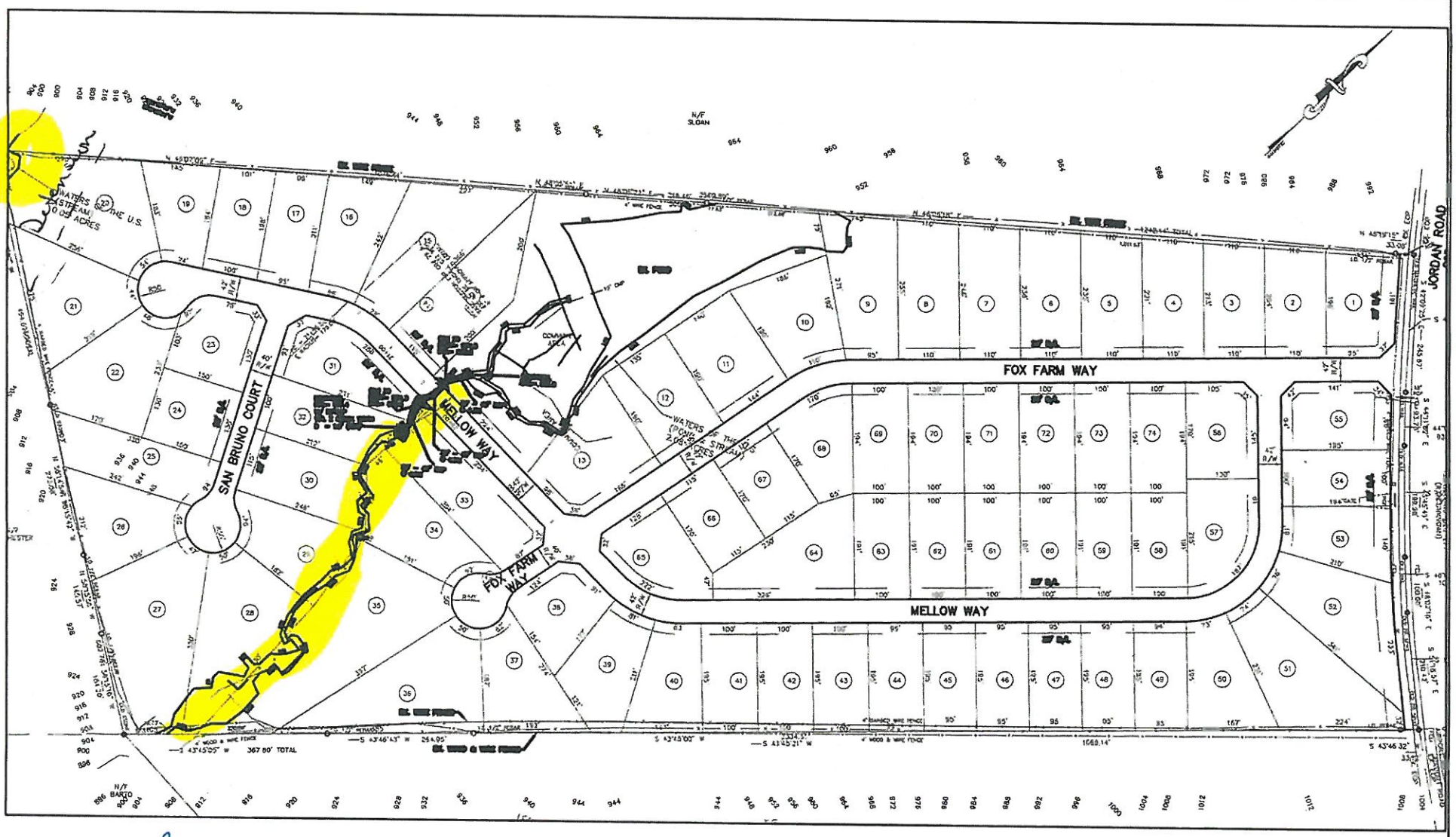






Populations of *Hexastylis naniflora* found on target property.

ENVIRONMENTAL PERMITTING CONSULTANTS, INC.	GRAPHIC SCALE 300 0 300 600 1 inch = 600 feet	REVISIONS NO.: DRAWN BY: COMMENTS:	Boulder Creek Species Location Map Midland Builders Greenville County	SHEET NO. 2
Post Office Box 3744 Greenville, SC 29608 Phone: (864) 271-3040 Fax: (864) 235-9299	DRAWN BY: lhb DATE: 23jan2006 EPC PROJECT NO.: 05pcm131		USACE P/N:.	OF 2



Balanger

Laura Balanger

ENVIRONMENTAL PERMITTING -CONSULTANTS, INC.	GRAPHIC SCALE 125 0 125 250 1 inch = 250 feet	REVISIONS NO. / DRAWN BY / COMMENTS	Boulder Creek Overview Midland Builders Greenville County USACE P/N:.	SHEET NO. 3 OF 5
Post Office Box 3744 Greenville, SC 29608 Phone: (864) 271-3040 Fax: (864) 235-9299	DRAWN BY: lhb DATE: 23jan2006 EPC PROJECT NO.: 05pcn131			



Photo 1: Representative photo of the cleared area on the target property.



Photo 2: Representative photo of the stream on the target property.



Photo 3: Area north of the pond, potential habitat for bunched arrowhead

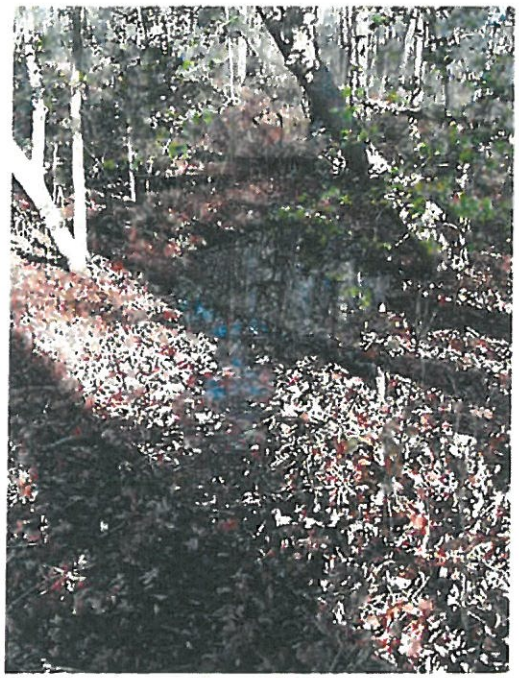


Photo 4: *Hexastylis naniflora* habitat



Hexastylis naniflora located on target property

From: Reid, Rebekah N
To: llgaddy2
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 7:27:50 AM
Importance: High

Thank you, Chick.

I would like to talk with you about Hexastylis. I will be in Charleston for training the first part of next week but will have time the second part of the week. Would Thursday or Friday work for you?

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Wed, Nov 29, 2017 at 8:32 PM, llgaddy2 <llgaddy2@gmail.com> wrote:

> Rebekah
>
> Haven't been out to SC sites lately. I know the Spartanburg Water sites were very large populations, as were the Cowpens sites.
>
> Was in NC last spring mapping those Duke Lake James pops? You have probably already got that data. Call me if you want to talk Hexastylis in both states. Hex. sorriei is rare in SC, more common in NC.
>
> Have you seen Mark Rose's new species from NC?
>
> Chick Gaddy
> 803 629-6128
>
> Sent from my Verizon, Samsung Galaxy smartphone
>
> -------- Original message --------
> From: "Reid, Rebekah" <rebekah_reid@fws.gov>
> Date: 11/29/17 1:31 PM (GMT-05:00)
> To: scpca <scpca@lists.fws.gov>
> Subject: [Scpca] Hexastylis naniflora in SC
>
> Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the following would be very helpful:

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  Claggett site in Raintree subdivision (last Heritage update 1991)
  UT to Spivey Creek (last Heritage update 1991)
  Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

From: Frederick Parrish
To: Reid, Rebekah N
Subject: Re: Hexastylis naniflora on SPACE Properties
Date: Friday, December 1, 2017 7:54:26 AM
Importance: High

You bet.
Sent from Yahoo Mail on Android

On Fri, Dec 1, 2017 at 7:30 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Hi Fred,
>
> Thank you for the information. Could we talk more towards the end of next week? I'll be in Charleston the first part of the week for training but I'll be back Thursday and Friday.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> On Thu, Nov 30, 2017 at 7:35 AM, Frederick Parrish <fmpiii@bellsouth.net> wrote:
>
> > Hey Rebekah,
> >
> > There are 2 populations at the Chinquapin Greenway associated with a Piedmont Seep. There is one site at the Cleveland Preserve. There may be more there. This 350 acre property contains the headwaters for Peter's Creek.
> > Alice Clagett 's property has a healthy population threatened by English Ivy. Raintree Sub-division.
> > Camp Mary Elizabeth, close to Raintree, has populations along the creek. (Fairforest Creek drainage basin)
> > This is a start, but there's more.
> > This is pretty neat. Glad to be involved.
> >
> > Fred Parrish
> >
> > Sent from Yahoo Mail for iPad

From: Reid, Rebekah N
To: Herrick Brown
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 8:11:16 AM
Importance: High

Herrick,

Thank you for the information and access to SERNEC. I had Kathy send me Heritage data and much of it is outdated. Would the Biotics data be more current?

Rebekah Reid

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On Wed, Nov 29, 2017 at 2:36 PM, Herrick Brown <BrownH@dnr.sc.gov> wrote:

> Rebekah,
>
> Jill (Gillian) Newberry formerly of USC Upstate in Spartanburg was quite active with this species. There was some recent activity involving property outside of Travelers Rest, SC and adjacent to Blackwell and Bunched Arrowhead preserves that involved some scrutiny for occurrences of this species. Indeed we found the answers on some specimens at USCS available here:
>
> http://sernecportal.org/portal/collections/list.php?taxa=Hexastylis%20naniflora&thes=1&type=1&state=south%20carolina&db=all&page=1
>
> I've granted your user account permission to view all of the details and the specimen images where you'll see the coordinate values (on some as the metadata are not fully developed on many).
>
> I can work to get you what SC Heritage has so far in Biotics for this species.
>
> Also, you might try Zack Murrell at App State U, I know he has had an interest in this species and you may be able to convince him to fast track the digitization of any specimens he has (they don't

currently appear to be available in the SERNEC portal).

Best,

Herrick

Herrick Brown - Assistant Botanist

SC Dept. of Natural Resources
Heritage Trust Program
P. O. Box 167, Columbia, SC 29202
1000 Assembly St., Columbia, SC 29201
office: 803-734-4320 fax: 803-734-9200
BrownH@dnr.sc.gov

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From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca <scpca@lists.fws.gov>
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

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From: Reid, Rebekah N
To: Bert Pittman
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 8:12:00 AM
Importance: High

Thank you, Bert.

I appreciate the information.

Rebekah Reid

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On Wed, Nov 29, 2017 at 3:19 PM, Bert Pittman <PittmanB@dnr.sc.gov> wrote:

> Rebekah
>
> The Columbia office of the Heritage Program has not been involved with the species in some time. That would have been Mary Bunch, preserve manager, in the Clemson office. She is now retired and replaced by Pat Cloninger. CloningerP@dnr.sc.gov . I think the new tract Herrick is referring to may be under negotiation which typically remains confidential until acted upon by the SC Heritage Trust Board. Pat can advise.
>
> Bert
>
> Albert B. Pittman, Ph.D.
>
> Botanist
>
> Heritage Trust Section
>
> SC Dept. of Natural Resources
>
> P.O. Box 167, Columbia, SC 29202
>
> 1000 Assembly St., Columbia, SC 29201

office: 803-734-3920 fax: 803-734-9200

From: Herrick Brown
Sent: Wednesday, November 29, 2017 2:37 PM
To: Reid, Rebekah <rebekah_reid@fws.gov>
Cc: Suiter, Dale <dale_suiter@fws.gov>; Bert Pittman <PittmanB@dnr.sc.gov>; Kathy Boyle <BoyleK@dnr.sc.gov>; 'April Punsalan' <april_punsalan@fws.gov>; amy Blackwell <amyblackwell@me.com>
Subject: RE: [Scpca] Hexastylis naniflora in SC

Rebekah,

Jill (Gillian) Newberry formerly of USC Upstate in Spartanburg was quite active with this species. There was some recent activity involving property outside of Travelers Rest, SC and adjacent to Blackwell and Bunched Arrowhead preserves that involved some scrutiny for occurrences of this species. Indeed we found the answers on some specimens at USCS available here:

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I've granted your user account permission to view all of the details and the specimen images where you'll see the coordinate values (on some as the metadata are not fully developed on many).

I can work to get you what SC Heritage has so far in Biotics for this species.

Also, you might try Zack Murrell at App State U, I know he has had an interest in this species and you may be able to convince him to fast track the digitization of any specimens he has (they don't currently appear to be available in the SERNEC portal).

Best,

Herrick

Herrick Brown - Assistant Botanist

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From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca <scpca@lists.fws.gov>
Subject: [Scpca] Hexastylis naniflora in SC

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Thank you and please feel free to email me directly.

Rebekah Reid

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From: Frank Holleman
To: Reid, Rebekah N
Subject: RE: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 8:20:16 AM
Importance: High

Thursday afternoon or Friday. Tied up Thursday morning, thanks!

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, December 01, 2017 8:17 AM
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC

Hi Frank,

Thank you so much! This is great information. I would like to discuss Hexastylis with you further. I will be in Charleston for training the first part of next week but I'll be back Thursday and Friday. I can give you a call one of those days if that works with your schedule.

Thanks,

Rebekah Reid

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On Thu, Nov 30, 2017 at 11:03 AM, Frank Holleman <fholleman@selcnc.org> wrote:
Rebekah,

I'm the President of Naturaland Trust, the land trust in Greenville that works to protect special places in the SC Piedmont and SC's Blue Ridge Mountains. We are interested in Hexastylis naniflora and seek to protect properties that include it. I'm also a volunteer with the SC Native Plant Society. I'm copying Jeff Beacham, the former state president, because, as set out below, he and I have worked on a couple of projects involving it, and also our current state president, Lisa Lord. I'm also an attorney with the Southern Environmental Law Center, and sometimes the various projects overlap.

Here are some projects we've been involved in:

1. Peters Creek. Naturaland Trust acquired a parcel (about one acre, as I recall) that bisected the trail and the creek in the Peters Creek Heritage Trust Preserve, to protect the Preserve. We have not

thoroughly checked that property, but we aren't aware of any HN on it.

2. We are currently working with SC DNR to try to acquire property next to the Blackwell Heritage Trust Preserve in Travelers Rest, SC. That preserve was established to protect the bunched arrowhead. There was a proposal to intensively develop an adjacent 56 acres. That proposal has now been withdrawn, and DNR has applied for a USFWS grant to acquire the property. We have found HN on that property, as well as bunched arrowhead. The Heritage Trust manager for our area has surveyed the property and has a count of the HN populations on that property.

In addition, there is property adjacent to the Preserve and the proposed development property owned by a conservation-minded person, Johnny Stone. Some years ago, he enrolled some of his property in the Heritage Trust Program because of the presence of bunched arrowhead. We found HN on his property, in addition to the bunched arrowhead, and in close proximity to it.

We did not survey the Blackwell HTP for HN, but it is possible there are some HN populations on the existing HTP.

3. Jeff Beacham and I and others have worked to try to deal with the storm water on the site of Gateway Elementary School in Travelers Rest. The campus of that school includes an undeveloped woodland that is braided with seeps and streams, which include the bunched arrowhead. Stormwater has impacted the bunched arrowhead in the woodland. We have found HN on that property, as well.

4. In the course of checking on mitigation activities in the area for SELC, I ran across a subdivision in Greer, Boulder Creek, where the developer was required to put aside land because of the presence of HN on it. Jeff and I have met with the Homeowners Association and visited the site. There are populations of HN on the property, and the properties in question have been put aside. The HOA was unaware of the plants, however, until we contacted them and met with them. The mitigation requirements required the developer to put in place a plan with the HOA for the long term protection of the plant, which had not been done. I am sure the HOA would be happy for you to come and see the plant.

This mitigation was done under a Biological Opinion for HN done by the USFWS. It would be good if you could survey the USFWS records for any other BiOps for HN, and we could check on their status, too. Attached are some of the documents related to this one.

There are also other plants on neighboring properties upstream and downstream of these mitigation properties. I wrote the property owners seeking to purchase those portions, but have never heard back. If you wanted to pursue them, that would be great, too!

5. Finally, if you know of any other opportunities to preserve and protect populations of this plant, let us know. We would be happy and pleased to work with you on the effort. I am particularly interested in the subdivision populations you mentioned. If you could send me information on those sites and if they are in our area, we could visit them and see what's up. There may be opportunities to protect the plants and/or acquire properties for protection.

Frank S. Holleman III
President
Naturaland Trust
148 River Street, Suite 110
Greenville, South Carolina 29601
(864) 979 9431
FrankHolleman@naturalandtrust.org

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca
Subject: [Scpca] Hexastylis naniflora in SC

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Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service
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The information contained in this communication from the sender is confidential.

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From: Reid, Rebekah N
To: llgaddy2
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 9:38:09 AM

Absolutely, after the first of the year will be fine.

Have a great trip, sounds very exciting! I'll be in touch.

Rebekah Reid

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On Fri, Dec 1, 2017 at 9:29 AM, llgaddy2 <llgaddy2@gmail.com> wrote:

> Can we do it after Christmas? I will be in Vietnam on vacation from Dec 5-19. Plant expedition to the mts on the Viet-Chinese border.
>
> How about the first of the year?
>
> Chick
>
> Sent from my Verizon, Samsung Galaxy smartphone
>
> -------- Original message --------
> From: "Reid, Rebekah" <rebekah_reid@fws.gov>
> Date: 12/1/17 7:27 AM (GMT-05:00)
> To: llgaddy2 <llgaddy2@gmail.com>
> Subject: Re: [Scpca] Hexastylis naniflora in SC
>
> Thank you, Chick.
>
> I would like to talk with you about Hexastylis. I will be in Charleston for training the first part of next week but will have time the second part of the week. Would Thursday or Friday work for you?
>
> Rebekah Reid
>
> US Fish and Wildlife Service
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On Wed, Nov 29, 2017 at 8:32 PM, llgaddy2 <llgaddy2@gmail.com> wrote:

Rebekah

Haven't been out to SC sites lately. I know the Spartanburg Water sites were very large populations, as were the Cowpens sites.

Was in NC last spring mapping those Duke Lake James pops? You have probably already got that data. Call me if you want to talk Hexastylis in both states. Hex. sorriei is rare in SC, more common in NC.

Have you seen Mark Rose's new species from NC?

Chick Gaddy
803 629-6128

Sent from my Verizon, Samsung Galaxy smartphone

-------- Original message --------
From: "Reid, Rebekah" <rebekah_reid@fws.gov>
Date: 11/29/17 1:31 PM (GMT-05:00)
To: scpca <scpca@lists.fws.gov>
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From: Herrick Brown
To: Reid, Rebekah N
Subject: RE: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 10:13:10 AM
Importance: High

Rebekah,

To my knowledge Hexastylis naniflora records are not in our current backlog. We prioritized all of the Megapetition species and some other Federally listed ones a couple of years ago so that all of those should be as up-to-date as possible. It's more likely that no one has looked or observations have not been reported.

H

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, December 01, 2017 10:01 AM
To: Herrick Brown <BrownH@dnr.sc.gov>
Subject: Re: [Scpca] Hexastylis naniflora in SC

Herrick,

Thanks for the clarification. That was my understanding but I just wanted to make sure. The data was exported recently but the last observation dates are showing age. Does that mean that no one has looked in a while, observers didn't report their data to Heritage, or there is a backlog of data to be entered? Or, all of the above?

Rebekah Reid

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On Fri, Dec 1, 2017 at 9:56 AM, Herrick Brown <BrownH@dnr.sc.gov> wrote:

> Rebekah,
>
> Biotics = Heritage data. What do you mean by 'outdated'? Was it exported a long time ago? Or are date of last observation fields showing considerable age?
>
> Best,
> Herrick

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, December 01, 2017 8:11 AM
To: Herrick Brown <BrownH@dnr.sc.gov>
Subject: Re: [Scpca] Hexastylis naniflora in SC

Herrick,

Thank you for the information and access to SERNEC. I had Kathy send me Heritage data and much of it is outdated. Would the Biotics data be more current?

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Herrick Brown - Assistant Botanist
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phone: 828-258-3939 x238

cell: 828-782-0090

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From: Janie Marlow
To: Reid, Rebekah N
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Friday, December 1, 2017 10:48:27 AM
Importance: High

Hope the information proves helpful.

Yes. That's me. Thank you for the kind words!

Have a good Christmas if we don't talk again -

Janie

From: "Reid, Rebekah" <rebekah_reid@fws.gov>
Date: Fri, 1 Dec 2017 07:25:20 -0500
Subject: Re: [Scpca] Hexastylis naniflora in SC
To: Janie Marlow <webmaster@namethatplant.net>

Hi Janie,

Thank you so much! This is wonderful information.

Do you run the NameThatPlant website? That's one of my favorite sites and I recommend it to people often.

Thanks,

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Wed, Nov 29, 2017 at 4:10 PM, Janie Marlow <webmaster@namethatplant.net> wrote:
Hi Rebekah -

There is a population of *H. naniflora* in the woods behind Gateway Elementary School in Travelers Rest in Greenville County (as well as some Sagittaria fasciculata). I don't know exactly where on the property it is, but I am copying Jeff Beacham <jeffbeacham@gmail.com>, who worked with the school on a project to restore the construction-disrupted water supply to the Bunched Arrowhead population.

Jeff also discovered a population of *H. naniflora* in Cherokee County in 2013. I don't know if this is the population that you are already aware of or not; I know that he notified SC DNR at the time.

H. naniflora also exists on some other SPACE (Spartanburg Area Conservancy) properties in Spartanburg County.
I am copying Frederick Parrish <fmpiii@bellsouth.net>, who is familiar with the flora of SPACE properties.

I am also copying Gill Newberry <gnewberry@charter.net>, who is now retired but has worked extensively on H. naniflora over the years).

Hope this helps -
Janie Marlow
webmaster@namethatplant.net
Travelers Rest, SC
www.namethatplant.net

From: "Reid, Rebekah" <rebekah_reid@fws.gov>
Date: Wed, 29 Nov 2017 13:31:09 -0500
To: scpca <scpca@lists.fws.gov>
Subject: [Scpca] Hexastylis naniflora in SC
X-BeenThere: scpca@lists.fws.gov
List-Id: South Carolina Plant Conservation Alliance <scpca.lists.fws.gov>
List-Subscribe: <https://www.fws.gov/lists/listinfo/scpca>,
<mailto:scpca-request@lists.fws.gov?subject=subscribe>
Sender: SCPCA <scpca-bounces@lists.fws.gov>

Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the following would be very helpful:

- Who is working on H. naniflora in SC? And, what have you been up to?
- Does anyone have information on the following sites:

Cherokee Creek near Cowpens (last Heritage update 2004)
Spartanburg Water System Preserve (last Heritage update 2001)
Claggett site in Raintree subdivision (last Heritage update 1991)
UT to Spivey Creek (last Heritage update 1991)
Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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From: fmpiii
To: Reid, Rebekah N
Subject: Re: Hexastylis naniflora on SPACE Properties
Date: Tuesday, December 12, 2017 10:26:25 PM
Importance: High

Hey Rebekah,
No problem. 864 590 6943 is my cell.
I'm way better in person than on the phone due to stuttering. I txt fine.
Do you want to walk these Hexastylis sites?
Let me know.

Fred

Sent from my Verizon, Samsung Galaxy smartphone

-------- Original message --------
From: "Reid, Rebekah" <rebekah_reid@fws.gov>
Date: 12/11/17 1:18 PM (GMT-05:00)
To: fmpiii@bellsouth.net
Subject: Re: Hexastylis naniflora on SPACE Properties

Hi Fred,

I'm sorry we didn't get to catch up on Friday. Our office was closed due to the snow. Also, I realized, I don't have your phone number. Can you send me the best phone number to reach you? Also, if a particular day this week is better, please let me know. All of my field days have been canceled this week so I'm flexible.

Thank you!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Fri, Dec 1, 2017 at 7:54 AM, Frederick Parrish <fmpiii@bellsouth.net> wrote:

> You bet.
> Sent from Yahoo Mail on Android
>
> On Fri, Dec 1, 2017 at 7:30 AM, Reid, Rebekah
> <rebekah_reid@fws.gov> wrote:

Hi Fred,

Thank you for the information. Could we talk more towards the end of next week? I'll be in Charleston the first part of the week for training but I'll be back Thursday and Friday.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Nov 30, 2017 at 7:35 AM, Frederick Parrish <(b)(6)(b)(6)(b)(6) wrote:

> Hey Rebekah,
>
> There are 2 populations at the Chinquapin Greenway associated with a Piedmont Seep.
>
> There is one site at the Cleveland Preserve. There may be more there. This 350 acre property contains the headwaters for Peter's Creek.
> Alice Clagett 's property has a healthy population threatened by English Ivy. Raintree Sub-division.
> Camp Mary Elizabeth, close to Raintree, has populations along the creek. (Fairforest Creek drainage basin)
> This is a start, but there's more.
> This is pretty neat. Glad to be involved.
>
> Fred Parrish
>
> Sent from Yahoo Mail for iPad

From: fmpiii
To: Reid, Rebekah N
Subject: Re: Hexastylis naniflora on SPACE Properties
Date: Tuesday, December 12, 2017 10:28:07 PM
Importance: High

PS: Thursday and Friday , Saturday are great.

Sent from my Verizon, Samsung Galaxy smartphone

-------- Original message --------
From: "Reid, Rebekah" <rebekah_reid@fws.gov>
Date: 12/11/17 1:18 PM (GMT-05:00)
To: fmpiii@bellsouth.net
Subject: Re: Hexastylis naniflora on SPACE Properties

Hi Fred,

I'm sorry we didn't get to catch up on Friday. Our office was closed due to the snow. Also, I realized, I don't have your phone number. Can you send me the best phone number to reach you? Also, if a particular day this week is better, please let me know. All of my field days have been canceled this week so I'm flexible.

Thank you!

Rebekah Reid

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> Sent from Yahoo Mail on Android
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Friday.

Rebekah Reid

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> This is pretty neat. Glad to be involved.
>
> Fred Parrish
>
> Sent from Yahoo Mail for iPad

From: Frederick Parrish
To: Reid, Rebekah N
Subject: Re: Hexastylis naniflora on SPACE Properties
Date: Thursday, December 14, 2017 7:33:15 AM
Importance: High

Hey Rebekah ,

That is perfect.
Andrew Waters is a personable guy who took Mary Walter's place as ex. Director of SPACE.
Lora High is his fundraiser and my good friend. She's a ball of fire.
I was Mary's assistant for 12 years. We had fun.
I have all kinds of info for you about who, what and where.
My family owns The Nooks, on Reasonover Rd in Cedar Mt. NC. We have the mountain bog, I think you came there for an inventory and met my brother, Tom Dashiell, and cousin, Caroline? I would have been there but something came up.
Gotta run my daughter to the bus, will finish this today!

Fred

Sent from Yahoo Mail for iPad

On Wednesday, December 13, 2017, 7:32 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Fred,
>
> I would really like to come to Spartanburg and see some of those sites since I haven't seen them before. Thank you for offering to show me around. Due to several conference calls over the next two weeks and the holidays, I would not be able to get away for a full field day until after the New Year. Let me know if any of these dates work for you: Jan. 3, 4, 11, or 17.
>
> Do you work for SPACE or are you a contractor? When inquiring about H. naniflora sites, someone at TNC gave me contact info for Andrew Waters. I'm trying to learn how everyone works together in the Upstate.
>
> Thanks!
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***

On Tue, Dec 12, 2017 at 10:28 PM, fmpiii <fmpiii@bellsouth.net> wrote:

> PS: Thursday and Friday , Saturday are great.
>
> Sent from my Verizon, Samsung Galaxy smartphone
>
> -------- Original message --------
> From: "Reid, Rebekah" <rebekah_reid@fws.gov>
> Date: 12/11/17 1:18 PM (GMT-05:00)
> To: fmpiii@bellsouth.net
> Subject: Re: Hexastylis naniflora on SPACE Properties
>
> Hi Fred,
>
> I'm sorry we didn't get to catch up on Friday. Our office was closed due to the snow. Also, I realized, I don't have your phone number. Can you send me the best phone number to reach you? Also, if a particular day this week is better, please let me know. All of my field days have been canceled this week so I'm flexible.
>
> Thank you!
>
> Rebekah Reid
>
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> > You bet.
> > Sent from Yahoo Mail on Android
> >
> > On Fri, Dec 1, 2017 at 7:30 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > Hi Fred,
> > >
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Rebekah Reid

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> This 350 acre property contains the headwaters for Peter's Creek.
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> Camp Mary Elizabeth, close to Raintree, has populations along the creek. (Fairforest Creek drainage basin)
> This is a start, but there's more.
> This is pretty neat. Glad to be involved.
>
> Fred Parrish
>
> Sent from Yahoo Mail for iPad

From: Reid, Rebekah N
To: Hamstead, Byron A
Subject: Consultant List for HENA
Date: Friday, December 15, 2017 9:25:37 AM
Attachments: Consultant List.xlsx
Importance: High

Here's the list. Anyone missing? Or, anyone that shouldn't be on it?

Thanks for the assist!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
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Name	Affiliation	Address 1	Address 2	Address 2	City, State Zip	Emails	Phone	Notes
Jennifer Robertson	Atlas Environmental	712 English Tutor Lane			Charlotte, NC 28211		704-512-1206	
Grant Lewis	Axiom Environmental	218 Snow Avenue			Raleigh, NC 27603	glewis@axiomenvironmental.org	919-215-1693	
Brian Smith	Carolina Ecosystems, Inc.	3040 NC-42			Clayton, NC 27520		919-359-1102	President
Greg Antemann	Carolina Wetland Services	550 E. Westinghouse Blvd			Charlotte, NC 28273		704-527-1177	
Clement Riddle	ClearWater Environmental Consultants	32 Clayton Street			Asheville, NC 28801	clement@cwenv.com	828-698-9800	
Kevin Markham	Environmental Services Inc.	4901 Trademark Drive			Raleigh, NC 27603	kmarkham@esinc.cc	919-212-1760	
Karri Cecil Blackmon	Habitat Assessment and Restoration Professionals	301 McCullough Drive, 4th Floor			Charlotte, NC 28262		704-841-2841	President
	HDR	440 S. Church Street	Suites 800, 900, & 1000		Charlotte, NC 28202		704-338-6760	
Kenneth Smith	HW Lochner	2840 Plaza Place, Suite 202			Raleigh, NC 27612		919-571-7111	
Frank Curti	Michael Baker International	101 N. Main Street, Suite 810			Greenville, SC 29601		864-670-2747	Local Office Supervisor
Micky Clemmons	Michael Baker International	797 Haywood Road, Suite 201			Asheville, NC 28806		828-350-1408	Local Office Supervisor
Doug Willoughby	RK&K Consulting Engineers	125 Floyd Smith Drive, Suite 140			Charlotte, NC 28262		980-235-0011	
Bob Zarzecki	S&EC	8412 Falls of the Neuse Road	Suite 104		Raleigh, NC 27612	bzarzecki@sandec.com	919-256-4517	
	S&ME	3201 Spring Forest Road			Raleigh, NC 27603		919-872-2660	
Mary Frazer	Three Oaks Engineering					mary.frazer@threeoaksengineering.com	919-215-5724	NCDOT contractor
Len Rindner	Wetlands and Environmental Planning Group	10612-D Providence Road, PMB 550			Charlotte, NC 28277	len.rindner@wetlands-epg.com	704-904-2277	

From: Frederick Parrish
To: Reid, Rebekah N
Subject: Re: Hexastylis naniflora
Date: Saturday, December 16, 2017 4:15:00 AM
Importance: High

Good! I'm thinking the 3rd will work fine. I'll be in touch.
You are so welcome!

Sent from Yahoo Mail for iPad

On Friday, December 15, 2017, 1:03 PM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> This is wonderful information!
>
> Let me know if any of those dates in January work for you (Jan. 3, 4, 11, or 17). I can be in Spartanburg as early as 8:30 but certainly doesn't have to be that early.
>
> Thank you!
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
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On Fri, Dec 15, 2017 at 11:00 AM, Frederick Parrish <fmpiii@bellsouth.net> wrote:

> Rebekah,
>
> You asked about who's who and how are they connected.
> Dan Whitten is in the Native Plant Society. He's a Master Naturalist and is very active in species inventories, plant distribution etc. He has spent the past 5 years with a dedicated group, going to all the SPACE properties and special habitats like Pearson's Falls.
> Others in this group:
> Gill Newberry is a retired botany professor at USC Upstate. Her property is a SPACE easement bordering Peter's Creek Heritage Preserve. She's the H.naniflora gal.
> Sarah and Lyle Campbell are USC staff and Audubon Club.
> Eva and Sam Pratt are SPACE easement owners and quite knowligble.
> Other good sources people:
> Mary Bunch from Clemson is a retired SCDNR biologist. She was in charge of

the state parks and heritage reserves in the upstate. I did contract work for her.
Mary Walter still is involved part time with the Connestee Natural Area south of Greenville. .She knows so many people.
Doug Rayner is a botany professor at Wofford. Like Wade Batson at USC, and Dan Patillo, Western Carolina, he is a field botanist. You gotta meet him.
Helen Correll, our neighbor and friend, illustrates for NC Wildlife.
I
More will come to mind.

Hope this helps!

Fred

Sent from Yahoo Mail for iPad

From: Hamstead, Byron A
To: Reid, Rebekah N
Subject: Re: Consultant List for HENA
Date: Monday, December 18, 2017 10:42:18 AM
Attachments: Consultant List (BAH edits).xlsx
Importance: High

I added a few folks starting at line 19 that often work in the species range. See attached list.

B

Byron Hamstead
Fish and Wildlife Biologist
USFWS Asheville Field Office
160 Zillicoa St., Suite B
Asheville, NC, 28801

828-258-3939 ext. 225

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On Fri, Dec 15, 2017 at 9:25 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Here's the list. Anyone missing? Or, anyone that shouldn't be on it?
>
> Thanks for the assist!
>
> Rebekah Reid
>
> US Fish and Wildlife Service
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Karri Cecil Blackmon	Habitat Assessment and Restoration Professionals	301 McCullough Drive, 4th Floor			Charlotte, NC 28262		704-841-2841	President
	HDR	440 S. Church Street	Suites 800, 900, & 1000		Charlotte, NC 28202		704-338-6760	
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Micky Clemmons	Michael Baker International	797 Haywood Road, Suite 201			Asheville, NC 28806		828-350-1408	Local Office Supervisor
Doug Willoughby	RK&K Consulting Engineers	125 Floyd Smith Drive, Suite 140			Charlotte, NC 28262		980-235-0011	
Bob Zarzecki	S&EC	8412 Falls of the Neuse Road	Suite 104		Raleigh, NC 27612	bzarzecki@sandec.com	919-256-4517	
	S&ME	3201 Spring Forest Road			Raleigh, NC 27603		919-872-2660	
Mary Frazer	Three Oaks Engineering					mary.frazer@threeoaksengineering.com	919-215-5724	NCDOT contractor
Len Rindner	Wetlands and Environmental Planning Group	10612-D Providence Road, PMB 550			Charlotte, NC 28277	len.rindner@wetlands-epg.com	704-904-2277	
Seth Ryan	Maser Consulting	9307 Monroe Road, Suites M & N			Charlotte, NC 28270	sryan@maserconsulting.com	732-383-1950	
Jarrod Karl	Hazen and Sawyer	9101 Southern Pine Boulevard, Suite 250			Charlotte, North Carolina 28273	jkarl@hazenandsawyer.com	704 357-3150	
Cory Darnell	ECS Carolinas, LLP	1812 Center Park Drive, Suite D			Charlotte, North Carolina 28217	cdarnell@ecslimited.com		
Chris Tinklenberg	Kimley-Horn and Associates, Inc.	200 South Tryon, Suite 200			Charlotte, North Carolina 28202	chris.tinklenberg@kimley-horn.com	704 409 1802	
Kevin Thomas	Kleinfelder	9009 Perimeter Woods Drive, Suite H			Charlotte, North Carolina 28216	kthomas@kleinfelder.com	704.598.1049	
Tamp Bandy	Wetlands & Waters, Inc.	4108 LB Propst Drive			Conover, NC 28613	jtampbandy@gmail.com	828-302-3437	

From: Reid, Rebekah N
To: Hamstead, Byron A
Subject: Re: Consultant List for HENA
Date: Tuesday, December 19, 2017 9:05:23 AM

Thanks!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Mon, Dec 18, 2017 at 10:42 AM, Hamstead, Byron <byron_hamstead@fws.gov> wrote:

> I added a few folks starting at line 19 that often work in the species range. See attached list.
>
> B
>
> ---
>
> Byron Hamstead
> Fish and Wildlife Biologist
> USFWS Asheville Field Office
> 160 Zillicoa St., Suite B
> Asheville, NC, 28801
>
> 828-258-3939 ext. 225
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From: Frederick Parrish
To: Reid, Rebekah N
Subject: Re: Hexastylis naniflora
Date: Tuesday, January 2, 2018 10:40:16 AM
Importance: High

Rebekah,
You are now most favorite person due to weather wisdom! Yes indeed.
Will be in touch and Happy New Year!
Fred

Sent from Yahoo Mail for iPad

On Tuesday, January 2, 2018, 8:25 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Hi Fred,
>
> I had you on the calendar for Jan. 3rd (tomorrow). I'm going to propose that we cancel and wait for a more hospitable day weather-wise. There is also some precipitation possible tomorrow and I'm worried about making it back to Asheville. Asheville was completely paralyzed Sunday night due to freezing drizzle that was not on the radar.
>
> I'll be in touch when the weather returns to normal. Thank you and Happy New Year!
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
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>
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> > Sent from Yahoo Mail for iPad
> >
> > On Friday, December 15, 2017, 1:03 PM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

This is wonderful information!

Let me know if any of those dates in January work for you (Jan. 3, 4, 11, or 17). I can be in Spartanburg as early as 8:30 but certainly doesn't have to be that early.

Thank you!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Fri, Dec 15, 2017 at 11:00 AM, Frederick Parrish <fmpiii@bellsouth.net> wrote:

> Rebekah,
>
> You asked about who's who and how are they connected.
> Dan Whitten is in the Native Plant Society. He's a Master Naturalist and is very active in species inventories, plant distribution etc. He has spent the past 5 years with a dedicated group, going to all the SPACE properties and special habitats like Pearson's Falls.
> Others in this group:
> Gill Newberry is a retired botany professor at USC Upstate. Her property is a SPACE easement bordering Peter's Creek Heritage Preserve. She's the H.naniflora gal.
> Sarah and Lyle Campbell are USC staff and Audubon Club.
> Eva and Sam Pratt are SPACE easement owners and quite knowligble.
> Other good sources people:
> Mary Bunch from Clemson is a retired SCDNR biologist. She was in charge of the state parks and heritage reserves in the upstate. I did contract work for her.
> Mary Walter still is involved part time with the Connestee Natural Area south of Greenville. .She knows so many people.
> Doug Rayner is a botany professor at Wofford. Like Wade Batson at USC, and Dan Patillo, Western Carolina, he is a field botanist. You gotta meet him.
> Helen Correll, our neighbor and friend, illustrates for NC Wildlife.
> I
> More will come to mind.

Hope this helps!

Fred

Sent from Yahoo Mail for iPad

From:	Reid, Rebekah N
To:	Nancy Cole
Subject:	Letters to Send
Date:	Wednesday, January 10, 2018 10:34:27 AM
Attachments:	DFHL Interested Parties Letter (01.10.18).pdf Addresses for HENA Interested Parties.xlsx
Importance:	High

Nancy,

Can you send the attached letter to the 6 people or organizations on the spreadsheet? If you can't do it today, just let me know.

Thank you!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street Suite #B
Asheville, North Carolina 28801

January 10, 2018

Dear Dwarf-flowered Heartleaf Partner:

The dwarf-flowered heartleaf (*Hexastylis naniflora*) is a threatened species that is endemic to the upper Piedmont region of western North Carolina and upstate South Carolina. In 1989, the U.S. Department of Interior listed the dwarf-flowered heartleaf as a threatened species. A Recovery Plan for the species was never completed. However, over the last 29 years, the U.S. Fish and Wildlife Service (Service) has worked closely with partners to make significant progress toward recovery of the species. The Service is initiating a Species Status Assessment (SSA) to aid in determining the appropriateness of reclassifying the species. In the event that the SSA does not support reclassification, the SSA would be used to inform the development of a Recovery Plan.

The Service's new SSA framework is intended to generate a highly integrated, explicit, and scientifically based approach to evaluate the biological and conservation status of a species. The dwarf-flowered heartleaf SSA will begin with a compilation of the best available information on the species (taxonomy, life history, and habitat) and its ecological needs at the individual, population, and/or species levels. Next, the SSA will describe the current condition of dwarf-flowered heartleaf habitat and demographics, and the probable explanations for any past or ongoing changes in these parameters. Finally, the SSA forecasts the species response to probable future scenarios of environmental conditions and conservation efforts.

The SSA is intended to inform regulatory and policy decision, but be developed independently from any such decision. The Service will ultimately provide a public notification of the finding in the *Federal Register*. Any associated proposed rulemakings would include an opportunity for the public to review and comment.

The Service will accept new information throughout this process, although it would be most helpful if provided by February 10, 2018. Information should be submitted to:

Rebekah Reid
Asheville Ecological Services Field Office
U.S. Fish and Wildlife Service
160 Zillicoa Street, Suite B
Asheville, North Carolina 28801
Email and Phone: rebekah_reid@fws.gov, (828) 258-3939 x238

All data and information submitted to the Service, including names and addresses, will become part of the administrative record.

Thank you for your interest in the conservation of threatened and endangered species. Please do not hesitate to contact Rebekah Reid at the phone number or email listed above with any questions or if you would like additional information regarding dwarf-flowered heartleaf.

Sincerely,

Project Leader

Name	Affiliation
Dave Willoughby	RK&K Consulting Engineers
James Padgett	New Home United Methodist Church
	US Army Corps of Engineers - Columbia Regulatory Field Office
	Catawba County Wildlife Club
	Girl Scouts of America - Camp Mary Elizabeth
Robert and Carolyn Tate	

Address 1	Address 2
125 Floyd Smith Drive, Suite 140	
544 Moriah School Road	
Charleston District	Strom Thurmond Federal Building
PO Box 544	
330 Scout Drive	
4411 US 221 South	

Address 3	City, State Zip
	Charlotte, NC 28262
	Casar, NC 28150
1835 Assembly Street, Room 865 B-1	Columbia, SC 29201
	Hickory, NC 28603
	Spartanburg, SC 29301
	Forest City, NC 28043

From: Reid, Rebekah N
To: Cole, Nancy
Subject: Re: Letters to Send
Date: Wednesday, January 10, 2018 11:40:52 AM

Thank you!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Wed, Jan 10, 2018 at 11:18 AM, Cole, Nancy <nancy_cole@fws.gov> wrote:

> It's a done deal!
>
> Nancy
>
> On Wed, Jan 10, 2018 at 10:34 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > Nancy,
> >
> > Can you send the attached letter to the 6 people or organizations on the spreadsheet? If you can't do it today, just let me know.
> >
> > Thank you!
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
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> > cell: 828-782-0090
> >
> > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***

--
Nancy Cole
Asheville Ecological Services Field Office
U.S. Fish and Wildlife Service
160 Zillicoa Street

Asheville, NC 28801
828/258-3939, Ext. 232 (phone)
828/258-5330 (fax)
Nancy_Cole@fws.gov

NOTE: This email correspondence and any attachments to and from this sender are subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

From:	Marshall, Michael E
To:	Reid, Rebekah N; Endries, Mark
Cc:	Stephanie DeMay; Becker, Drew N
Subject:	Elicitation Questions
Date:	Thursday, January 18, 2018 9:26:28 AM
Attachments:	Dwarf-flowered heartleaf Elicitation Questions_01182018.docx
Importance:	High

Good morning all,

I've put together a set of elicitation questions for our technical team which will help guide important aspects of the SSA. I'd like to send these out by the end of the day today, so if you get a chance to look these over before I send out, I'd appreciate it. I'd give folks 1-week to answer and return to me.

Thanks a bunch!

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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DWARF-FLOWERED HEARTLEAF ELICITATION QUESTIONS

Below is an overview of the questions we are asking for your expert feedback on. Each question is elaborated on in a new page below with information I've gleaned from the literature and reports. Please record your answers and insights on the following pages and return to me via email by Friday, January 26. Thank you! - Mike

1. How would you suggest delineating populations for this species?

2. What factors are important for characterizing resilience for this species? These include population factors (e.g. population size/density) and habitat factors (e.g. soil type, canopy cover).

3. How would you suggest delineating representative units for this species?

4. In thinking about future scenarios and viability of this species, what are the most pertinent risk factors to consider (e.g. development, invasive species, climate change)?

5. Based on the primary risk factors identified in question #4, what do you think an appropriate future time frame to project future conditions might be?

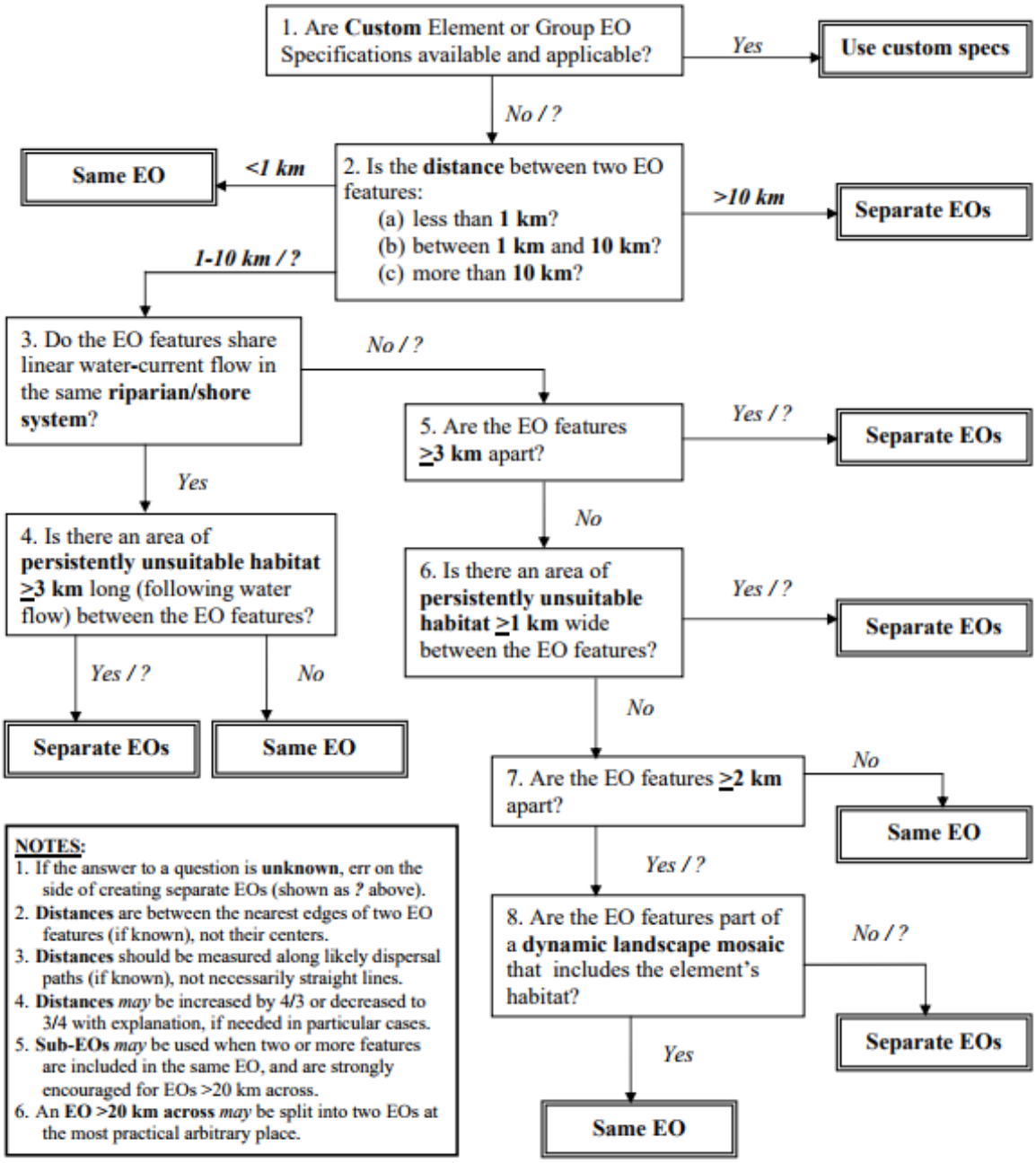
1. How would you suggest delineating populations for this species?

Under the 3 R's framework (resilience, redundancy, and representation), resilience is measured at the scale of a population, and resilient populations are then scaled up to assess redundancy and representation for the whole species. Because the population is the basic unit, it is important to define what constitutes a population. Recently, a "population" was defined based on NatureServe's separation distance criteria for a plant species of 1 km between separate populations/element occurrences. Pasted on the following page is their decision tree (full document here: http://www.natureserve.org/library/deliminting_plant_eos_Oct_2004.pdf). This seems to be the standard for this species and is used in NCNHP reports and the 5-year review. 1 km is the default separation distance, which they recommend altering if additional information or species characteristics warrant it. As of 2016, the combined databases of the NCNHP and SCNDNR contain 239 Element Occurrence Records (EORs) for *H. naniflora* (NCNHP2016, SCDNR 2016). These EORs depict roughly 113 locations which are sufficiently geographically distinct to be regarded as proxies for populations of the species

Based on the Natureserve guidelines or other information currently known, would you suggest using a criterion other than 1 km of separation between distinct populations? If so, what information is that based on (e.g. dispersal vectors or distances, pollinator behavior, genetic results)?

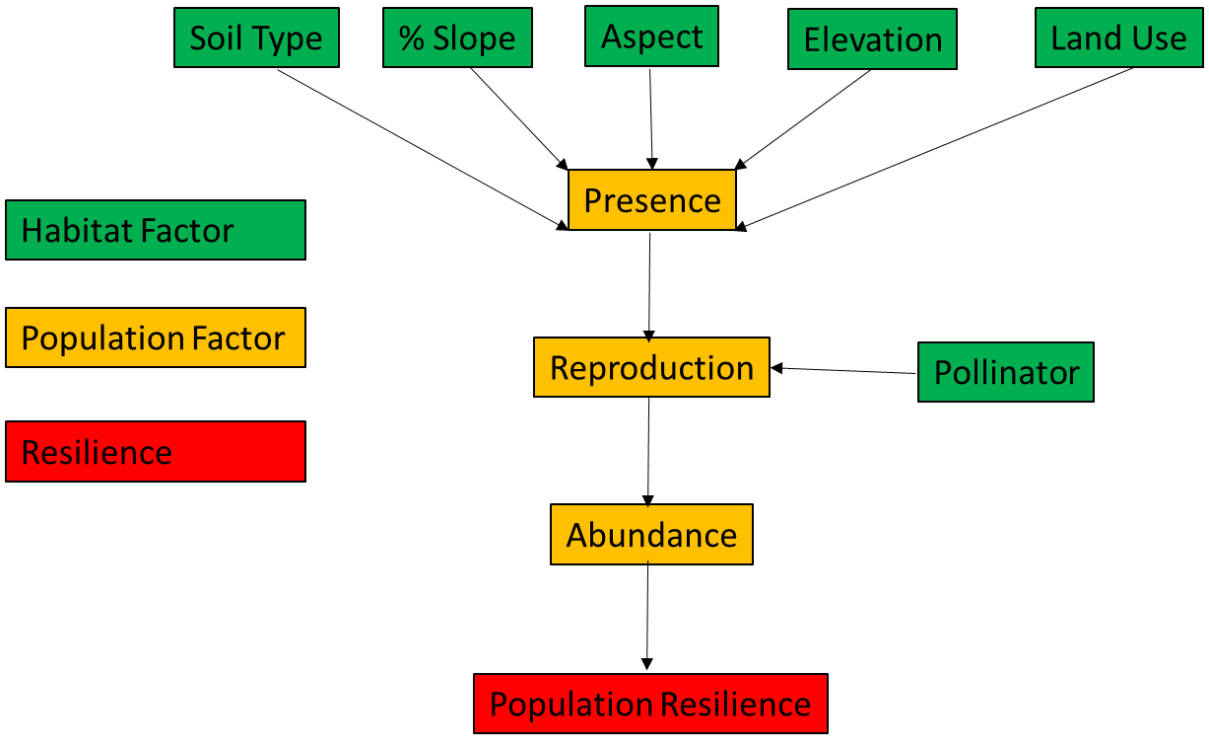
Answer:

Figure 1. Habitat-based Plant Element Occurrence Delimitation Guidance, 1 October 2004



2. What factors are important for characterizing resilience for this species? These include population factors (e.g. population size/density) and habitat factors (e.g. soil type, canopy cover).

These are the factors that we will use for each population to determine its resilience (whether it is a resilient vs. not resilient classification, or low-medium-high resilience, or some other kind of ranking). Based on the literature, there seem to be a few logical factors to include in the SSA (see influence diagram below). To the extent possible, some of these factors would be used in a model to quantify, to the extent possible, current and future condition of the species, and ultimately viability.



Potential habitat seems to be based on a few factors: soil type (occur in 4 soil types, mainly Pacolet sandy loam), % slope (8-10%), aspect (prefer north facing), elevation (199-415 m), and land use (i.e. deciduous forest).

The main population factor driving resilience of a given population seems to be population size. Given habitat is available and the species is present, reproduction must occur for a population to grow, and that is at least partly influenced by presence of pollinators, which seem to be mainly ants.

Other considerations: connectivity for cross-pollination/seed dispersal (distance from nearest neighbor population); Protected- either protected conservation land or some kind of landowner agreement.

Based on your knowledge of the species biology and needs. Feel free to select the most important ones from my preliminary list, please add any important things I missed, and by all means argue against anything on my list or otherwise that isn't an important contributor. While there are many factors that interact to influence populations, our goal is narrow it down to the most important factors for our assessment.

Answer:

3. How would you suggest delineating representative units for this species?

Representation refers to the species ability to adapt to changing environmental conditions, and can also be thought of as diversity. This can be genetic diversity and/or diversity in habitat types, life history traits, or other characteristics that could be indicative of underlying genetic diversity.

For dwarf-flowered heartleaf, one could argue that here are no representative units, that there is only one "type". Support for this idea is the limited range of the species. Other ideas might stem from some of the genetic analyses for the species, indicating some type of latitudinal variation. The STRUCTURE analysis provides strong evidence that populations in the southern part of the range of *H. naniflora* are not subject to significant hybridization pressures, whereas populations in the southeast portion of the range appear to by hybridizing with *H. minor* and populations in the northern portion of the range appear to form a hybrid swarm with *H. heterophylla* and *H. minor*. Would this suggest representative units for the species based on a north-south-southeast split? Where might that split be mapped for purposes of the SSA? Watersheds? Basins?

Given your expertise and experience, would you suggest delineating different representative units for the species? If so, how? Alternately, would you suggest there is only one "type" across the species range? If so, why?

Answer:

4. In thinking about future scenarios and viability of this species, what are the most pertinent risk factors to consider (e.g. development, invasive species, climate change (temp, precip, etc))?

> For the SSA, we will define a set of possible future scenarios, and assess what future resilience, redundancy, and representation might look like under those scenarios. What are the most important factors to consider that could influence species viability now and into the future that we need to consider when defining future scenarios?

Answer:

5. Based on the primary risk factors identified in question #4, what do you think an appropriate future time frame to project future conditions might be?

When we project populations into the future under different scenarios, we will need to be explicit about how far into the future we are projecting. Based on the risk factors identified above, *HENA* life history/generation times, uncertainty associated with the risk factors and *HENA* responses to them, over what time frame do you think we can reasonably predict future population conditions?

From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark; Stephanie DeMay; Becker, Drew N
Subject: Re: Elicitation Questions
Date: Friday, January 19, 2018 11:13:29 AM
Importance: High

Hi Mike,

So sorry for the delay. I am squashed by this cold/flu thing I've been fighting. The questions look good to me. I seem to remember having a conversation with NHP about the population definitions and separation distances. I think we talked about a 2km default that they used. Unfortunately, my notes are at work and I'm at home. It doesn't change the question but I'll be interested in hearing their population definitions and their interpretation of the NatureServe guidelines.

Provided there is no shutdown, I plan on returning to the office on Monday. Should we use the same call-in/passcode for the call?

Everyone have a great weekend!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Jan 18, 2018 at 9:26 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Good morning all,
>
> I've put together a set of elicitation questions for our technical team which will help guide important aspects of the SSA. I'd like to send these out by the end of the day today, so if you get a chance to look these over before I send out, I'd appreciate it. I'd give folks 1-week to answer and return to me.
>
> Thanks a bunch!
>
> Mike
>
> --
> Mike Marshall
> SSA Program Specialist
> U.S. Fish and Wildlife Service Region 4
> Cell: 512-461-6217
> Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Endries, Mark; Stephanie DeMay; Becker, Drew N
Subject: Re: Elicitation Questions
Date: Friday, January 19, 2018 11:24:07 AM
Importance: High

Hi Rebekah,

Thanks for the feedback. I hope you get to feeling better soon...seems everyone is catching some type of bug this year. I'll send out an invite to webex and call in number in just a minute. Have a great weekend!

Mike

On Fri, Jan 19, 2018 at 11:13 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Hi Mike,
>
> So sorry for the delay. I am squashed by this cold/flu thing I've been fighting. The questions look good to me. I seem to remember having a conversation with NHP about the population definitions and separation distances. I think we talked about a 2km default that they used. Unfortunately, my notes are at work and I'm at home. It doesn't change the question but I'll be interested in hearing their population definitions and their interpretation of the NatureServe guidelines.
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> Everyone have a great weekend!
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From:	Marshall, Michael E
To:	suzanne.mason@ncdcr.gov; jame.amoroso@ncdcr.gov; Matt Estep; tpbassette@ncdot.gov; Endries, Mark
Cc:	Stephanie DeMay; Reid, Rebekah N; Becker, Drew N
Subject:	Elicitation Questions
Date:	Friday, January 19, 2018 11:39:21 AM
Attachments:	Dwarf-flowered heartleaf Elicitation Questions_01182018.docx
Importance:	High

Hello Technical Team!

First, I want to thank everyone for joining the kick-off call. I thought it was quite productive. On that call, I mentioned sending some elicitation questions out to the technical team in order to ensure species expert input into the drafting of the SSA for HENA. I have attached a questionnaire to this email. Please take a look and answer the questions to the best of your ability by next Friday (1/26/18).

I am currently drafting the Species Biology and Species Needs portions of the SSA, and should have that wrapped up by 1/29/18 for your review, though the elicitation questions will help in that drafting, so if you could get me your answers asap, I'd greatly appreciate it.

Thanks, and have a great weekend!

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

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DWARF-FLOWERED HEARTLEAF ELICITATION QUESTIONS

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3. How would you suggest delineating representative units for this species?

4. In thinking about future scenarios and viability of this species, what are the most pertinent risk factors to consider (e.g. development, invasive species, climate change)?

5. Based on the primary risk factors identified in question #4, what do you think an appropriate future time frame to project future conditions might be?

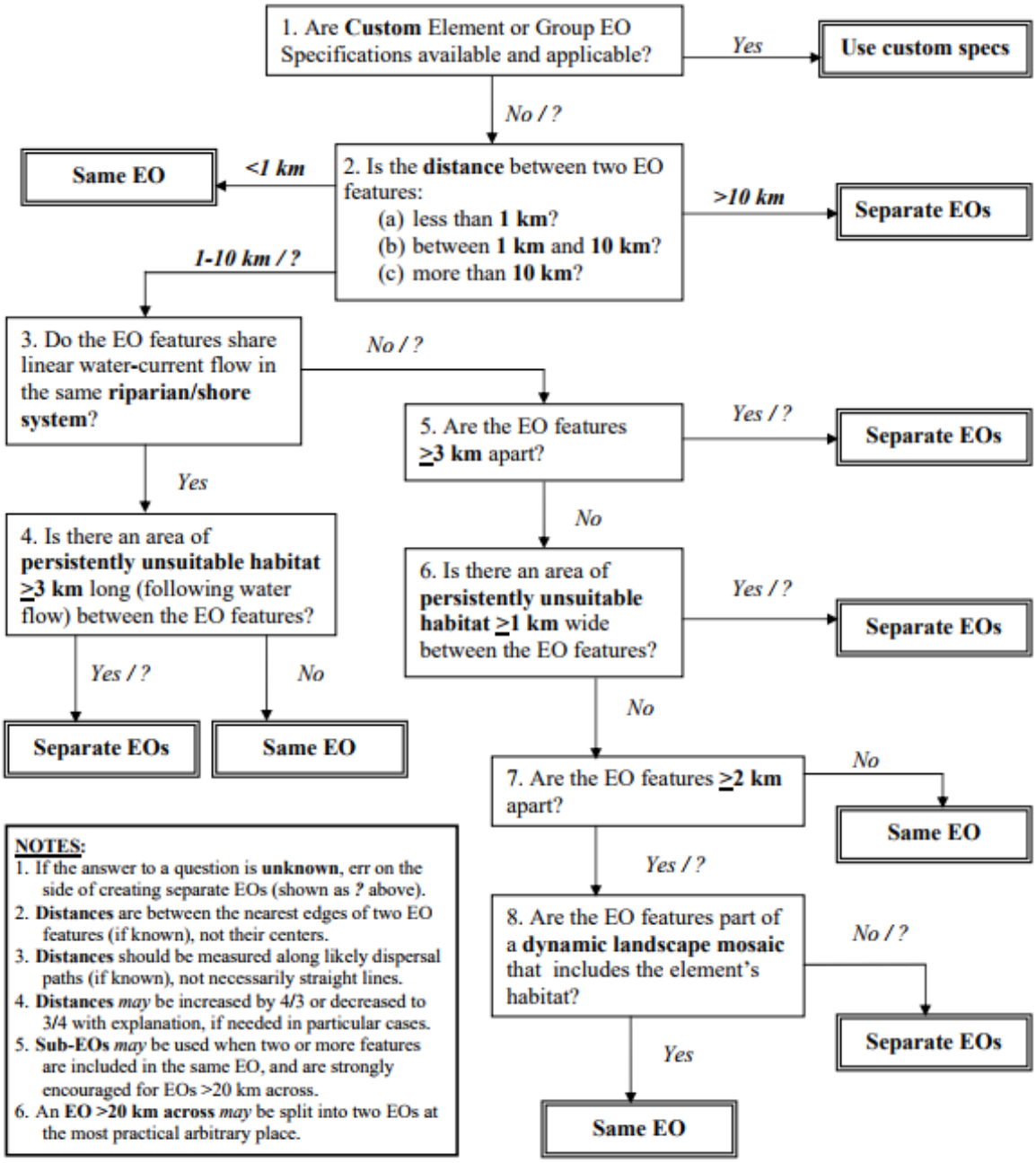
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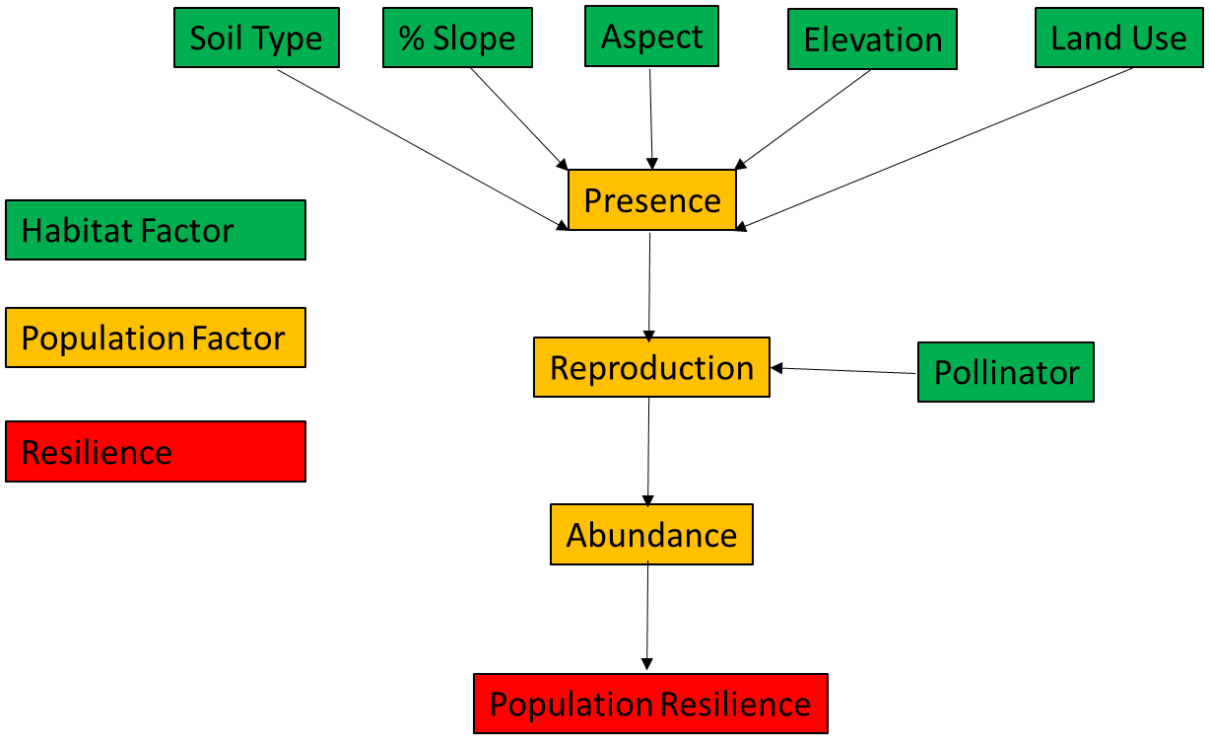
Answer:

Figure 1. Habitat-based Plant Element Occurrence Delimitation Guidance, 1 October 2004



2. What factors are important for characterizing resilience for this species? These include population factors (e.g. population size/density) and habitat factors (e.g. soil type, canopy cover).

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Answer:

3. How would you suggest delineating representative units for this species?

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Answer:

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Answer:

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From: Janie Marlow
To: Reid, Rebekah N
Cc: Gill Newberry
Subject: Fwd: Hexastylis naniflora
Date: Sunday, January 21, 2018 2:54:51 PM
Attachments: Notes on Hexastylis populations.edited.odt

Rebekah -

Below is an email from Dr Gillian Newberry <gnewberry@charter.net> that I believe was intended for you. It was accompanied by a statement and six photographs, which can be downloaded at the link below:

https://spaces.hightail.com/receive/pyLGfWnvk1

Thx -
Janie Marlow
webmaster@namethatplant.net

>To: Janie Marlow <webmaster@namethatplant.net>
>From: Gillian Newberry <gnewberry@charter.net>
>Subject: Hexastylis naniflora
>Date: Sun, 21 Jan 2018 11:31:36 -0500
>
>Dear Rebekah
>
>I have received several e-mails concerning the status of H. naniflora. I have included here a statement and photos that may hel.p
>
>
>Dr. Gillian Newberry -retired botanist from USC Upstate.

Notes on the status of populations of *Hexastylis naniflora*

Jan 20, 2018

I have been observing and studying populations of *Hexastylis naniflora* in North and South Carolina for the past thirty years.

In the Tryon area of N C and in Greenville and Spartanburg Counties of SC Dwarf Flowered Heartleaf can be found on north-facing slopes along steams usually associated with stands of *Kalmia*. In Catawba county of North Carolina, the *Hexastylis* populations are probably *Hexastylis heterophylla*. The differences between *H. naniflora* and *H. heterophylla* are as follows:

H. naniflora	*H. heterophylla*
Leave rounded without terminal tip	Leaves larger, heart-shaped often with terminal tip
Flowers less than 1 cm long	Flowers more than 1 cm long
Flowers as long as broad	Flowers longer than broad

The SC populations of *H. naniflora* are showing some decline due to drought stress on the upper slopes.

Preserve have been set up to protect large population at Peter Creek, Saranac like SPACE preserve, Lake Blalock, and along the Pacolet River at USC Upstate. A few smaller populations are also under some protection.

There is no doubt that these two species are closely related and may be varieties of the same species.

However, I feel that before it is delisted that a DNA analysis be done comparing the NC and SC populations. This will add much light to the distinctiveness of these two populations.

I have included photos of plants that are unquestionably *H. naniflora*. These were all taken from plants in the Pacolet drainage, Tryon NC.

I hope this information helps with your reevaluation of this species.

I will be in Iceland until January 30. I will check my e-mail when I return. My phone (which has an answering machine) is 864-579-4471.

Thank you for your concern for the diversity of our upstate.

Sincerely,

Gillian Newberry

Gillian Newberry

From: Reid, Rebekah N
To: Janie Marlow
Cc: Gill Newberry
Subject: Re: Hexastylis naniflora
Date: Tuesday, January 23, 2018 11:10:18 AM

Thank you both for the information.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Sun, Jan 21, 2018 at 2:54 PM, Janie Marlow <webmaster@namethatplant.net> wrote:

> Rebekah -
>
> Below is an email from Dr Gillian Newberry <gnewberry@charter.net> that I believe was intended for you. It was accompanied by a statement and six photographs, which can be downloaded at the link below:
>
> https://spaces.hightail.com/receive/pyLGfWnvk1
>
> Thx -
> Janie Marlow
> webmaster@namethatplant.net
>
> ---
>
> >To: Janie Marlow <webmaster@namethatplant.net>
> >From: Gillian Newberry <gnewberry@charter.net>
> >Subject: Hexastylis naniflora
> >Date: Sun, 21 Jan 2018 11:31:36 -0500
> >
> >Dear Rebekah
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> >
> >
> >Dr. Gillian Newberry -retired botanist from USC Upstate.

From:	Amoroso, Jame
To:	Marshall, Michael E; Mason, Suzanne
Cc:	Reid, Rebekah N; Robinson, Laura
Subject:	RE: [External] Elicitation Questions
Date:	Friday, January 26, 2018 11:53:48 AM
Attachments:	image001.png Range-wide Status Report Hexastylis naniflora_2016.pdf Dwarf-flowered heartleaf Elicitation Questions_01182018_NCNHP.docx
Importance:	High

Hi Mike,

Attached are NHP's responses to the elicitation questions. Some of my answers refer to a previous report which I have also included with my reply.

Please let me know if you have any questions. NCNHP appreciates the opportunity to participate in this process.

Thank you,
Jame

Jame Amoroso

Conservation Information Specialist

121 W Jones St MSC 1651 Raleigh, NC 27699-1651
919 707 8621 *office*
Jame.Amoroso@ncdcr.gov

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From: Marshall, Michael [mailto:michael_marshall@fws.gov]
Sent: Friday, January 19, 2018 11:39 AM
To: Mason, Suzanne <suzanne.mason@ncdcr.gov>; Amoroso, Jame <jame.amoroso@ncdcr.gov>; Matt Estep <estepmc@appstate.edu>; Bassette, Tim <tpbassette@ncdot.gov>; Mark Endries <mark_endries@fws.gov>
Cc: Stephanie DeMay <sdemay@vt.edu>; Rebekah <rebekah_reid@fws.gov>; Drew Becker <drew_becker@fws.gov>
Subject: [External] Elicitation Questions

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.

Hello Technical Team!

First, I want to thank everyone for joining the kick-off call. I thought it was quite productive. On that call, I mentioned sending some elicitation questions out to the technical team in order to ensure species expert input into the drafting of the SSA for HENA. I have attached a questionnaire to this email. Please take a look and answer the questions to the best of your ability by next Friday (1/26/18).

I am currently drafting the Species Biology and Species Needs portions of the SSA, and should have that wrapped up by 1/29/18 for your review, though the elicitation questions will help in that drafting, so if you could get me your answers asap, I'd greatly appreciate it.

Thanks, and have a great weekend!

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

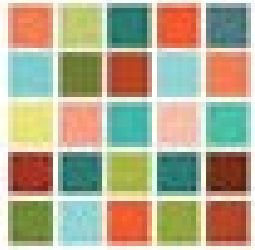
Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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NORTH CAROLINA
Natural Heritage Program
SCIENCE GUIDING CONSERVATION





NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

Dwarf-flowered Heartleaf (*Hexastylis naniflora)*
Range-wide Status Report
August 2016

Flex Fund Grant

Final Report to U.S. Department of the Interior – U.S. Fish and Wildlife Service
by
North Carolina Natural Heritage Program

Report submitted by
Laura Robinson, N.C. Natural Heritage Program
Department of Natural and Cultural Resources
1651 MSC, Raleigh, NC 27699-1651
www.ncnhp.org



Photo by Julie Tuttle

Agreement No: F11AC01382
DUNS NO: 809785280

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Current Species Status

Hexastylis naniflora (Dwarf-flowered Heartleaf) was federally listed as threatened by the U.S. Fish and Wildlife Service (USFSW) in 1989 under the Endangered Species Act of 1973. At the time of federal listing, there were only 24 known populations across its range in North and South Carolina. It was estimated that the total number of individuals across the range was only approximately 5,000 (USFWS 2010). However, even with its limited range in North and South Carolina, *Hexastylis naniflora* is not as rare as once thought, and many populations have been discovered since listing. In 2010, the USFWS recognized 108 total populations, with the number of populations containing over 1,000 individuals (sometimes counted as "clumps" or rosettes) having increased from 3 in 1989 to 27 (USFWS 2010).

In 2012, the N.C. Natural Heritage Program (NCNHP) initiated a status survey under a USFWS Flex Fund Grant to monitor and delineate some of the largest known populations, previously identified by USFWS to be important for recovery efforts. These monitoring data, coupled with populations monitored by the N.C. Department of Transportation (NCDOT) under Section 7 consultations, would provide consistent baseline population data to help assess the status and trends of the species (USFWS 2010, Robinson and Padgett 2016). As part of this study, NCNHP reviewed all element occurrences (EOs) and determined that there are an estimated 113 total populations (91 in NC and 22 in SC) (North Carolina Natural Heritage Program [NCNHP] 2016, South Carolina Department of Natural Resources [SCDNR] 2016). Thus, the total number of known extant populations has increased more than four-fold (from 24 to 113) since the species was first listed. In 2010 it was estimated that 27 populations contained at least 1,000 rosettes. That number is now estimated to be 26 populations, based on updated information and more accurate mapping of EOs in the database. Many of these large populations with over 1,000 individuals are estimated to have tens of thousands of individuals (NCNHP 2016).

For the purpose of this report, the term "population" refers to parent EOs and all associated subEOs within them, as delineated by the N.C. Natural Heritage Program, using NatureServe mapping standards. Appendix B1 describes how numerous small, site-specific locations have been aggregated into proxies for 113 populations across North and South Carolina, as modeled and described by the USFWS in the 2010 five-year review (USFWS 2010). This process was used to reevaluate the estimated number of populations using current 2016 data (NCNHP 2016, SCDNR 2016).

Species Biology

Description

Hexastylis naniflora is a low-growing herbaceous plant in the Aristolochiaceae family. It was first described by Blomquist (1957) in his revision of the North American members of the genus *Hexastylis*. The plant has heart-shaped, evergreen leaves that are dark green, leathery, and approximately 4-5 inches long. The leaves are supported by a long, thin petiole that extends from a subsurface rhizome. The flowers are jug-shaped, usually beige to dark brown or purple, and flower in mid-March to early June. The flowers are small and inconspicuous and are found near the base of the leaf stems, often buried in leaf litter (USFWS 1989). Characteristics that distinguish it from other *Hexastylis* species are found in floral structures and pollen characters (Gaddy 1987, Padgett 2004, Niedenberger 2010). *H. naniflora* has a smaller calyx tube orifice, which is typically 5mm or less (sometimes up to 7mm) and the ovary is half-inferior, rather than superior (Blomquist 1957, Gaddy 1987, Padgett 2004, HDR 2005). Pollen surface features have also been shown to be an effective character to identify *H. naniflora*, as it has a microporate surface and, unlike any other *Hexastylis* species, lacks gemmae entirely (Padgett 2004, Niedenberger 2010).

Taxonomic classifications

There have been considerable disagreements on the generic distinctiveness of *Hexastylis* and *Asarum* (Barringer 1993 and Kelly 1997, 1998, 2001). However, a recent phylogeny estimate using chloroplast genes supports that *Hexastylis* is a monophyletic clade and therefore should be recognized as a genus (Niedenberger 2010). Additionally, most North American publications recognize *Hexastylis* at the generic level (Flora of North America 1997, Weakley 2015). There are currently no known proposed changes in taxonomy that would affect the continued legal status of *H. naniflora* under the Endangered Species Act.

Genetics and genetic variation

Analyses on ecology, morphology, soil chemistry, pollen, and molecular genetics have been evaluated for *Hexastylis naniflora* to determine the boundaries within the *Hexastylis heterophylla* complex, which consists of *H. heterophylla*, *H. minor*, and *H. naniflora* (Murrell 2015, Wagner 2013, Niedenburger 2010, USFWS 2010, Murrell et al. 2007, Padgett 2004). These analyses supported the continued recognition of these taxa as well-defined, discrete species. As previously mentioned, scanning electron microscopy (SEM) consistently distinguished *H. naniflora* from other members of the *H. heterophylla* complex based on pollen characteristics (Padgett 2004, Niedenburger 2010). However, previous efforts to obtain consistently distinct genetic banding patterns using Inter Simple Sequence Repeats (ISSRs) were unsuccessful at distinguishing *H. naniflora* from other members of this group (Murrell et al. 2007, USFWS 2010).

Field observations demonstrate that there are some populations of *H. naniflora* with morphological characteristics that do not fit within the range of published values for key traits, overlapping with values for *H. heterophylla* or *H. minor* (Weakley 2015, USFWS 2010, Murrell et al. 2007, Gaddy 1987). These populations with overlap in key characteristics were the focus of a genetic analysis conducted at Appalachian State University (ASU) through funding provided by NCDOT (Murrell 2015). In some populations, floral characteristics are highly variable, which suggests the potential for hybridization or individuals with highly variable flower size and shape (Murrell 2015). Additionally, no vegetative characters were previously known to consistently distinguish *Hexastylis naniflora* from other close relatives. Given the difficulties with field identification of the species, particularly when not in flower, this study sought to develop a microsatellite library of molecular markers to resolve variation in populations of *H. naniflora* and apply the markers to populations with highly variable characters, as identified by NCDOT biologists. The morphological and micromorphological information from those variable populations were compared to molecular results with morphological, micromophological, and distributional data to determine genetic structure, biological boundaries, and placement of putative hybrids or intermediate populations of *H. naniflora* (Murrell 2015).

The preliminary findings of this study suggest that populations in the southern range of *Hexastylis naniflora* exhibit a more uniform genetic pattern, with some possible hybridization with *H. minor*. Populations in the northern part of the range appear to have hybridized with both *H. heterophylla* and *H. minor*, although there are still individuals with "pure" *H. naniflora* genotypes in the northern range (Murrell 2015). It is critical to note that although these data provide anecdotal evidence of hybridization with the *Hexastylis heterophylla* group, intraspecific variation may be caused by forces other than hybridization, such as convergent morphological evolution (Dobzhansky 1937), or the species is in the process of speciation and this study shows a case of incomplete speciation (Murrell 2015), and/or other environmental factors are at play (Wagner 2013). On May 11, 2016 a meeting was held with USFWS, NCNHP, NCDOT, and ASU to discuss the status of *H. naniflora* and the current work being conducted among the agencies (Amoroso 2016). Based on discussions during this meeting, the results of this study reported by ASU to NCDOT in 2015 are preliminary. Dr. Matt Estep (ASU) provided additional preliminary

results to NCNHP in May 2016, showing which populations were sampled, sample size, and percent of samples that show evidence of hybridization, and hybridizing with which species (Table A1, Appendix A). ASU continues to work towards a more definitive explanation of the variation in the *H. heterophylla* complex (Murrell 2015, Amoroso 2016). Decisions on the legal status of this species should not be made based on the preliminary results of this study before the analysis is completed and a peer-reviewed publication is available.

Distribution and habitat

Although *Hexastylis naniflora* is restricted in range, it is not as rare as once thought (USFWS 2010, NCNHP 2016). This species occurs in the upper piedmont of North and South Carolina. In North Carolina, it is found in Alexander, Burke, Caldwell, Catawba, Cleveland, Gaston, Iredell, Lincoln, Polk, and Rutherford Counties. In South Carolina, it is in Cherokee, Greenville, and Spartanburg Counties (Figure A1, Appendix A). *Hexastylis naniflora* occurs on piedmont uplands on acidic sandy-loam soils that are very deep and moderately permeable (Gaddy 1981, 1987). Typical habitats for this species include mesic to dry bluffs, slopes, or ravines in deciduous forests that are frequently associated with *Kalmia latifolia* (Padgett 2004, Weakley 2015, USFWS 2015), or in moist soils adjacent to creeks, streamheads, or along lakes and rivers. Plants have been observed to grow larger and have more frequent flowering in floodplains along rivers, lakes, and streams (Newberry 1993).

Wagner (2013) conducted a habitat suitability study to quantify the habitat requirements for *Hexastlyis naniflora*, which may be used for helping identify *H. naniflora* when not in flower (relative to other *Hexastylis* species habitat preferences), find new populations, or identify suitable sites for transplants. A model was created to predict habitat suitability to determine how many EOs are found within habitat considered fair to excellent. Based on the model, the strongest habitat correlations were that the slope aspect was north-facing, soil type is Pacolet sandy loam, elevation was between 230-260m, percent slope is 8-10%, and land use is deciduous forest (Wagner 2013).

There are little data on the response to fire by *Hexastylis naniflora*, however, prescribed burns have been conducted within the population at Cowpens National Battlefield in Cherokee County SC. Preliminary data at this site and recent annual monitoring data of this population support the theory that moderate controlled burns do not negatively affect this population (Walker et al. 2009). Additionally, a dormant season wildfire in Caldwell County did not show evidence of negative impacts to a population in Caldwell County (USFWS 2010). Fire suppression could be a hazard to *H. naniflora* by allowing fire intolerant, nonnative and invasive plants to thrive, as well as the accumulation of thick duff or leaf litter that may shade low growing species (Wagner 2013).

Demographics

As reported by the USFWS (2010), there has been a single effort to collect demographic-level data (survivorship and recruitment of tagged individuals) for *H. naniflora*. This effort was conducted in 1990-1991, within a portion of the Peters Creek population (Newberry 1993). This study showed a 96.1% survival rate over these two seasons, with 50% of the mortality occurring in plants located at the highest position on the forested slope (away from the adjacent floodplain). Mortality was highest in small plants with fewer than four leaves. Plant size was variable, with the largest plant bearing 45 leaves and 33 flowers, and situated in the floodplain. Plants located in the floodplain were generally larger than those on adjacent slopes. The percentage of flowering plants averaged 70%, with the highest frequency of flowering occurring among plants situated in the floodplain (USFWS 2010).

Abundance

As of 2016, the combined databases of the NCNHP and SCNDNR contain 239 Element Occurrence Records (EORs) for *H. naniflora* (NCNHP2016, SCDNR 2016). These EORs depict roughly 113 locations which are sufficiently geographically distinct to be regarded as proxies for populations of the species (Appendix B1). Thus, the total number of populations has increased more than four-fold (from 24 to 113) since the species was listed in 1989.

At this time, the largest known populations have been monitored by NCNHP and NCDOT. The estimates for entire populations are based on a consistent monitoring methodology developed by NCDOT, USFWS, and NCNHP with monitoring plots representing roughly 10% of a population. Populations were delineated to get a more accurate boundary and size of the area occupied. All rosettes are counted annually in each monitoring plot to estimate an extrapolated population size, based on the number and density in the plots. As a result of these efforts, better estimates of population sizes for the largest known populations are available, compared to when the last five-year review was completed in 2010 (Robinson and Padgett 2016).

The 113 EORs have been estimated to contain anywhere from a single rosette to over 100,000 rosettes. Table A2 (Appendix A) was created to replicate the same format and population data as Table B2 of the most recent USFWS five-year review of *H. naniflora* (USFWS 2010), for comparison of changes since 2010. Table A2 summarizes the largest occurrences of *H. naniflora*, with the size of the population based on the number of rosettes it was last estimated to contain. The number of populations estimated to contain over 1,000 rosettes is 26. This is approximately 23% of the total known populations and many of these populations contain well over 1,000 individuals.

There are, however, 13 populations (12% of all known) that are simply known to be extant, with no available estimate of population size (NCNHP 2016, SCDNR 2016). If the most recent population estimates for each EOR are compiled across years of observation, the 113 populations could conservatively be estimated to contain a collective total of more than 300,000 rosettes (NCNHP 2016, SCDNR 2016). An updated scorecard of all *H. naniflora* populations in North Carolina is included in Appendix B2.

Trends, threats, and protection measures

Population trends

The long-term trend is measured as the degree of change in population size, extent of occurrence, area of occupancy, or viability over approximately 200 years. The short-term trend reflects changes over approximately 10 years (Faber-Langednoen et al. 2012). Since there are no population data available as far back as 200 years, the long-term trend is unknown. As stated in the five-year review in 2010, the short-term trend is difficult to assess, as the observations across populations were grossly different, with incomparable levels of survey effort among years prior to 2012 (e.g., a complete census one year, followed by a coarse estimate the next, or still some other method). In many cases, one or more persons familiar with the site have questioned the degree to which the observations accurately reflect actual trends as opposed to incomparable counts/estimates (USFWS 2010). However, from 2012-2016, NCNHP conducted systematic annual surveys of thirteen of the largest populations across the range. For these surveys, populations of *H. naniflora* were delineated with a GPS and polygons were mapped during the first and last year (2012 and 2016) of the study to improve the mapping accuracy and spatial extent of the populations and to monitor any changes over the course of the project. At least one randomly placed monitoring plot was established within each population to capture and sample approximately 10% of the population (Robinson and Padgett 2016). This data set across five years, coupled with monitoring data

from NCDOT, may be used to estimate short-term trends and can be used as baseline data for determining trends in the future.

In 2009, NCDOT committed to provide the USFWS with updated status information for all or portions of 12 populations estimated to contain over 1,000 rosettes (Table A2, Appendix A). NCDOT monitoring efforts include USFWS population numbers 2, 4, 5, 7, 8, 9, 10, 11, 12, 13, and 23 in Table A2. Population 14, First Broad River: Crooked Run Creek (EO 157), was determined to be too far away from the roadside to be protected within the right-of-way, and NCDOT stopped monitoring it in 2010 (Bassette 2016). Therefore, the number of populations NCDOT is now monitoring is 11. This monitoring commitment was part of a conservation measure associated with a formal Endangered Species Act Section 7 consultation for adverse effects to *H. naniflora* (USFWS 2009). Most of these 11 populations were expected to be adversely affected by road widening projects previously subject to formal Section 7 consultations with USFWS (USFWS 2010). The adverse effects were minimized through relocation of plants and/or commitments to provide on-site protections to plants remaining within NCDOT rights-of-way following construction (USFWS 2010). In some cases, populations (or portions of them) were purchased as off-site conservation measures (these are also listed in Table A2, Appendix A). As a result of commitments pledged over many years of formal Section 7 consultations with the USFWS, NCDOT now protects more populations (or significant portions of them) than any other conservation partner throughout the range of *H. naniflora*. There is still a need to verify that plants are protected by NCDOT in roadside rights-of-way and the manner of protection. It is critical to obtain updates on the number of plants remaining post-construction, the survival of transplanted individuals, the number of rosettes protected within ROWs, and/or the number of rosettes protected via off-site land purchases in order to assess completely the status and trends of *H. naniflora* populations. NCDOT has contracted much of the survey work over the past five years and has sent reports for some of the populations (Table A2, Appendix A). We are currently awaiting updates for several of these sites monitored by NCDOT.

The Foothills Landfill in Caldwell County (USFWS population number 3, EO 227) has been routinely monitored since 2005. This population was adversely affected by activities requiring Endangered Species Act Section 7 consultation with the Service (USFWS, 2003). The Section 7 process resulted in minimization of impacts, permanent protection (through a conservation easement on 260 acres) of unaffected portions of the *H. naniflora* population, and long-term monitoring of the species within permanently protected areas for the life of the landfill (30 years) (USFWS 2010). Monitoring is conducted using 0.1-acre sample plots distributed throughout the population, in which all rosettes have been counted during the 2005, 2006, 2009, and 2014 field seasons (Golder Associates 2005, 2006, 2009, 2014). In 2014, extrapolating the densities within these plots to the larger delineated area of occupied habitat yielded 16,463 rosettes. This is a decline from the estimated 23,340 rosettes in 2009, and 30,780 rosettes in 2006. Although this population is still robust and considered of excellent viability, more information is needed on the possible threats within this population to determine the cause of the decline.

Three South Carolina populations estimated to contain over 1,000 rosettes were addressed by Section 7 consultations with other agencies: Cowpens National Battlefield, Blalock Reservoir, and Peters Creek Heritage Preserve (USFWS 2010). All or significant portions of these populations are subject to protective ownership (Table A2 and A3, Appendix A). During 2012-2016, NCNHP conducted monitoring at these sites to better estimate the area occupied and populations size and trends.

At Cowpens National Battlefield (Cherokee County, SC), the *Hexastylis naniflora* population was estimated to contain some 10,180 rosettes in 2005 (USFWS 2010). During surveys in 2012-2016, the population had some fluctuation in numbers, but remained relatively stable during the five years of monitoring. However,

the estimated number of rosettes in 2016 was 2,823 rosettes, significantly lower than last estimated in 2005 (Robinson and Padgett 2016). The National Park Service has conducted prescribed burns within portions of the *H. naniflora* population subject to formal and subsequent informal consultation with the USFWS (USFWS 2010, Walker et al. 2009). The scope of the prescribed burning activity increased to encompass the majority of this *H. naniflora* population (USFWS 2010). Preliminary data suggested that burning has had no adverse effects upon growth or flowering (Walker et al. 2009). However, USFWS has registered concerns over the limited scope of this two-season monitoring effort and has requested a continuation of monitoring to ensure that this large population is not adversely affected by this experimental management approach (USFWS 2010). There has been little information on the response of *H. naniflora* to fire, although anecdotal observation from a population in Caldwell County, North Carolina suggests that the species was not appreciably harmed by a dormant season wildfire that spread through a portion of that population in the winter of 2009 (USFWS 2010). Given the decline in population size estimate from 2005 to 2016, fires that are too frequent may be detrimental.

Blalock Reservoir (Spartanburg County, SC) was once widely regarded as the single largest population of the species, with over 11,000 rosettes estimated in 1997 (USFWS 2010). In 2006, the entire population was reported to consist of only 1,400 rosettes (Newberry, 2006). Since that estimate, the Spartanburg Water System conservation area was established to protect *H. naniflora* that has been affected twice by illegal encroachments from adjacent landowners (USFWS 2010, Newberry 2009). *H. naniflora* rosettes were affected or destroyed in both instances: in 2006, 35 rosettes were presumed destroyed (UWFWS 2010), and in 2009 an estimated 576 plants were presumed destroyed (Newberry 2009). Both instances involved adjacent landowners felling trees and/or harvesting timber within areas of occupied habitat (USFWS 2010). At the time of the 2010 USFWS five-year review, it was feared that this population only contained approximately 1,000 rosettes (USFWS 2010). The Blalock Reservoir population was included in the five-year monitoring by NCNHP. The estimated size of the population, based on extrapolated numbers from monitoring plots and the population boundaries, was 3,505 in 2016. In 2012, there were over 4,000 rosettes estimated. The population remained relatively stable during the five-year monitoring efforts (Robinson and Padgett 2016). Therefore, the population is larger than last estimated in 2006, but has experienced overall declines since 1997, despite protection efforts.

The Biological Opinion for the Blalock Reservoir expansion also included an off-site conservation measure for Spartanburg Water System to provide financial assistance to support restoration work within the Peters Creek Heritage Preserve (USFWS 2001). At this time, it has not been confirmed that this has occurred. The South Carolina Department of Natural Resources (SCDNR) Management Plan for Peters Creek briefly alludes to some wetland restoration having been conducted on site (SCDNR 2006) but it is unclear whether the restoration work had any effect on the *H. naniflora* population (USFWS 2010). The Peters Creek population was estimated to contain more than 5,000 rosettes in 1991, but fewer than 2,500 rosettes in 2006 (USFWS 2010). This population was included in the five-year monitoring efforts by NCNHP. The most recent estimate in 2016 was 3,306 rosettes, but in 2015 there were an estimated 5,467 rosettes. As mentioned in the final monitoring report (Robinson and Padgett 2016), it is possible that the 2016 South Carolina estimates may be slightly lower than previous years because of the timing of surveys. They were completed in the first week of March, which is the typically the best time to observe flowering of *Hexastylis naniflora*. However, it was discovered early in the study during years with a very cold spring, plants hadn't fully emerged until late spring or early summer, and early surveys could skew the monitoring results. As a result, most of the subsequent monitoring was done in May and June with the exception of the South Carolina sites in 2016. Therefore, the reduction of numbers of the South Carolina sites in 2016, compared to previous years, may reflect that not all plants had emerged in early March. Despite this

reduction in 2016, the overall numbers of rosettes estimated at Peters Creek Preserve in recent years have been close to numbers estimated in 1991.

Based on the results of the five-year monitoring efforts completed in 2016, nine out of thirteen populations remain stable during the five years of data collection (Robinson and Padgett 2016). The largest known population, Broad River: Henson's Creek, Brice, & Sandy Mush Outcrop (EO 099, USFWS population number 20) in Rutherford County, NC, is estimated to have over 100,000 rosettes (Robinson and Padgett 2016). This large population consists of many scattered subpopulations on private property; two of the subpopulations are protected as a Registered Heritage Area.

Two of the thirteen populations increased in numbers from 2012-2016: Cliffside Steam Station and Broad River: Floyds Creek, Long Branch. The Cliffside Steam Station (USFWS population number 15; Table A2, Appendix A) is protected with a voluntary agreement with Duke Energy and was estimated to contain over 39,000 rosettes in 2016. The Broad River: Floyds Creek, Long Branch population (USFWS population number 22, EO 177) is not at all protected, but was last estimated to consist of over 12,000 individuals in 2016 (Robinson and Padgett 2016).

Based on the results of recent surveys and a review of all known populations of *Hexastylis naniflora*, the overall short-term trend over approximately 30 years is estimated to be declining 10-30%. This is estimated by a combination of documented declines of some populations, while many others appear to be remaining relatively stable, and some have increased.

Population threats

Hexastylis naniflora occurs in the western Piedmont of North and South Carolina. Many populations occur in rapidly growing urban areas with expanding suburbs of Charlotte, NC, to the east; Hickory, NC, to the north; and Greenville and Spartanburg, SC, to the south. At the time of listing, it was determined that the species was most threatened by habitat loss due to the conversion of land to residential, commercial, and industrial use in these areas. Threats were assessed for populations monitored by NCNHP during 2012-2016 (Robinson and Padgett 2016). All EORs were also reviewed in 2016 for other documented threats to populations. In addition to threats associated with residential, commercial, and industrial development, other documented threats include habitat loss from land conversion to agricultural use, timber harvest, hydrological alterations from the damming of ponds, impacts from grazing cattle, ORV damage, trampling from foot traffic, invasive species, highway or road improvements, and erosion or siltation (NCNHP 2016, Robinson and Padgett 2016).

Reassessment of Grank and Srank

In 2016, NCNHP reviewed the Grank (Global rank) and Srank (Subnational rank) of *Hexastylis naniflora* using the NatureServe rank calculator, version 3.186 (Faber-Langendoen et al. 2012). The NatureServe rank calculator was developed to ensure status ranks were accurate and consistent, based on current data. The calculator is based on 8 core status rank factors relevant to risk assessments of extinction or extirpation, including categories of rarity, trends, and threats. Rarity is evaluated by the species' range extent, area of occupancy, number of extant occurrences, and number of occurrences of good or excellent viability (see NHP EO rank specifications, defined in Appendix B3). The trend category includes estimate for short-term and long-term trends. Long-term trend is the degree of past directional change in population size, extent of occurrence, area of occupancy, or viability over approximately 200 years. Short-term trends reflect changes over approximately 10 years (Faber-Langednoen et al. 2012). Threats are evaluated and given a rank based on severity, immediacy, and scope of the threat. The factors are scaled and weighted depending on their impact on the risk (Faber-Langendoen et al. 2012). The calculator is in

the form of an Excel spreadsheet, but all factors entered into the calculator are also entered and saved in the Element Global Ranking (EGR) form and Element Subnational Ranking (ESR) form in the NCNHP Biotics database.

Hexastlys naniflora was previously ranked G3S3. Using the NatureServe calculator and current data, these ranks were confirmed to be G3S3 in 2016. For the global range of *H. naniflora*, the range extent is estimated to be approximately 6,500 square km. The area of occupancy is measured by number of 4km square grids and is estimated to cover approximately 1,968 km^2. There are approximately 90 extant occurrences with 33 occurrences of good to excellent viability. The long-term trend is unknown without sufficient information going back 200 years; however, the short-term trend, over approximately 30 years, is estimated to be declining 10-30%, due to the balance of documented declines in some populations and other populations remaining stable. The overall threat impact is calculated to be Medium, based on a combination of all known threats and the scope, severity, and immediacy. The threats assessment from the rank calculator is shown in Appendix B4. The Element Global Ranking (EGR) report and Element Subnational Ranking (ESR) report is shown in Appendix B5 for *Hexastylis naniflora*.

After receiving the preliminary genetic data from ASU, we reran the Srank and Grank, excluding the twenty populations with 50% or higher percent of possible hybridization, and the calculation revealed no change based on the preliminary data.

Ongoing conservation efforts

A total of 21 populations across the range are fully or partially protected. Eighteen populations are protected in North Carolina. This is approximately 21% of the occupied area (43 out of 201 subEOs) in North Carolina. Three out of 22 populations in South Carolina, or approximately 14% of occupied area (3 out of 22 populations), are protected. The 21 total populations are at least partially protected by fee title ownership by conservation partners, conservation easements, deed restrictions, or voluntary landowner agreements. Voluntary landowner agreements consist of Registered Heritage Areas, which are voluntary conservation agreements between the landowner and NCNHP to preserve the natural area and biological diversity of the property. All protected populations of *Hexastylis naniflora* are listed in Table A3 of Appendix A.

Some populations counted as protected or that were anticipated to be protected in the 2010 five-year review (USFWS 2010) include sites that are in roadside rights-of-way where NCDOT pledged permanent protection through Section 7 consultation (USFWS 2010). Many of these sites, however, still need confirmation that they are indeed protected by NCDOT (Table A2, Appendix A). Several populations are afforded permanent protection through fee title ownership by conservation partners. These sites include NCDOT mitigation sites at Murrays Mill and the Broad River Greenway Mitigation site. Other sites in permanent protection include the Catawba Lands Conservancy's Rhyne Preserve, the Cleveland County Landfill, Cowpens National Battlefield, and Peters Creek South Carolina State Heritage Preserve. NCNHP holds four voluntary Registry Agreements with private landowners for the purpose of protecting *Hexastylis naniflora*. These sites are the Parris Heartleaf Registered Heritage Area (RHA), the New Hope Springhead (Barefield) RHA, the Catawba County Wildlife Club RHA, and the Smith Cliff/Henry Fork RHA. Some populations are protected through conservation easements held by various partners. These include populations at the New Bethel Rare Plant Site, held by NCDOT. The Foothills Conservancy of NC holds a conservation easement at Peaked Top Rare Plant Site, and The Nature Conservancy holds a conservation easement at Jacob Fork West Corridor.

Recovery

Proposed recovery strategy
The recovery strategy for *Hexastylis naniflora* involves protection and management of known sites of the species, including addressing immediate threats, such as exotic invasive species, as needed. In order to help recover this plant and grow the numbers of viable populations in the wild, efforts should be made to reduce threats to known populations and secure protection of large sites with good viability.

Proposed recovery goal
The ultimate recovery goal is to remove (delist) this species from the Federal List of Endangered and Threatened Plants (50 CFR 17.12) by ensuring the long-term viability of the species in the wild.

Proposed recovery criteria
The recovery criteria below are based on are the proposed criteria written by James Padgett (2004).

Hexastylis naniflora will be considered recovered when ten healthy populations are self-sustaining within its historical distribution and that the locality of those populations contains substantial genetic variability among them. If these conditions are met this species should no longer meet the criteria or definition of a Threatened species as outlined in the Endangered Species Act of 1973. A population that reproduces and is large enough to maintain genetic variability to survive and respond to natural changes in the habitat and environment will meet the criteria as a population healthy enough to receive protection. *Hexastylis naniflora* should be considered for delisting when the following criteria are met:

1. Of the 113 populations of *H. naniflora* known to exist, at least fifteen should be afforded protection, with at least ten populations considered permanently protected.
2. Management of the fifteen protected populations should be done in cooperation with the landowners and the necessary government agencies, and that all such actions should be documented to ensure future protection of those sites.
3. Protection is sought for new populations that are found, when possible, especially if they fall into locations where genetic variability might be of concern.
4. For populations already in protection, ensure that any future human encroachments or natural threats are managed to safeguard their long-term viability.

Actions needed:
1. Regularly monitor sites under protection and those of excellent viability to ensure stable population trends.
2. Implement management practices at protected sites and populations of excellent viability.
3. Complete genetic analysis to determine whether hybridization is occurring within the populations.
4. Encourage voluntary protection and stewardship through media and educational efforts for the public.

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Table A1: Appalachian State University preliminary genetic data (courtesy of Dr. Matt Estep 2016).

Latitude	Longitude	Genetic ID	# of individuals sampled	# of total rosettes in the population*	% Hybridization	Stand-alone or sub EO#
Not processed per agreement with Plaintiff/Requester		both	3	296	100	NC 20
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	3	>300	100	NC 21
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	2	>50	100	NC 39
Not processed per agreement with Plaintiff/Requester		both	3	~150-200	100	NC 59
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	2	617	100	NC 77
Not processed per agreement with Plaintiff/Requester		both	4	2,754	100	NC 161
Not processed per agreement with Plaintiff/Requester		*x H. heterophylla*	3	20	100	NC 231
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	3	5	100	NC 271
Not processed per agreement with Plaintiff/Requester		both	4	257	100	NC 275
Not processed per agreement with Plaintiff/Requester		both	2	No data	100	NC 282
Not processed per agreement with Plaintiff/Requester		x *H. minor*	2	373	100	NC 291
Not processed per agreement with Plaintiff/Requester		both	11	330	100	NC 157
Not processed per agreement with Plaintiff/Requester		x *H. minor*	1	200	100	SC 1
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	5	No data	80	NA (none known) Baker Mountain
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	4	100-200	75	NC 70
Not processed per agreement with Plaintiff/Requester		both	3	123	66	NC 158
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	2	No data	50	NA (none known)/DOT 36
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	2	20-50	50	NC 60
Not processed per agreement with Plaintiff/Requester		x *H. heterophylla*	4	100	50	NC 274
Not processed per agreement with Plaintiff/Requester		x *H. minor*	2	303	50	SC 36
Not processed per agreement with Plaintiff/Requester		x *H. minor*	3	11,446	33	NC 73
Not processed per agreement with Plaintiff/Requester		x *H. minor*	6	55	33	NC 200
Not processed per agreement with Plaintiff/Requester		x *H. minor*	3	50-100	33	NC 208
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	2	4,547	0	NC 106
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	2	5	0	NC 47

Latitude	Longitude	Genetic ID	# of individuals sampled	# of total rosettes in the population*	% Hybridization	Stand-alone or sub EO#
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	100	0	NC 107
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	750	0	NC 311
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	2,722	0	NC 149
Not processed per agreement with Plaintiff/Requester		x *H. minor*	1	330	0	NC 157
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	50-100	0	NC 172
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	11,860	0	NC 184
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	1	50-100	0	NC 213
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	4	2,326	0	NC 233
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	1	6,461	0	NC 259
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	~300-500	0	NC 287
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	2	~50	0	SC 13
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	>130	0	SC 17
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	50	0	SC 18
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	2	25-50	0	SC 19
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	2	150	0	SC 20
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	700	0	SC 21
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	250-300	0	SC 53
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	3	400	0	SC 54
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	2	50	0	SC 55
Not processed per agreement with Plaintiff/Requester		*H. naniflora*	1	200-250	0	SC 56

* Total number of rosettes for each population retrieved from most recent data in the NHP databases (NCNHP 2016, SCDNR 2016).

Table A2: Populations of *Hexastylis naniflora* estimated to contain over 1,000 rosettes in 2010, with updated information in 2016[1], and protection measures for these populations.

Populations known to be afforded some protection are indicated in **bold.**[2]

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
1	NC	Burke	029	A	Island Creek Heath Bluff (Lovelady Sites)	50,000+ (2016)	0	Not protected.
2	NC	Burke	178.159-178.161 178.254-178.256 178.280-178.282	A	Catawba River: Love Lady (Hoyle and Micol Creek)	~6,738 (2008-2011)	Awaiting data from NCDOT.	Possible NCDOT protected R-O-W, protection unconfirmed. In early 2016, the Town of Valdese applied to CWMTF to acquire part of this population.
3	**NC**	**Caldwell**	**227**	**A**	**Peaked Top Rare Plant Site (Foothills Landfill)**	**16,463 (2014)**	**16,463 (2014)**	**Conservation Easement (Foothills Conservancy of NC).**
4	**NC**	**Caldwell**	**044**	**AB**	**Little Gunpowder Creek Rare Plant Site 1**	**2,707 (2015)**	**2,424 (2015)**	**DOT mitigation site.**
5	NC	Catawba	158	D	South Fork Catawba River: Jacob Fork, Camp Creek	123 (2016)	27 (2015)	Some plants occur within an undetermined acreage within NCDOT R-O-W (Bassette 2016). Protection unconfirmed.
6	**NC**	**Catawba**	**243.012,** 243.242 243.269, **243.270**	**A**	**Catawba Wildlife Club**	**1,000-1300 (1995-2007)**	**>1,000 (1995-2007)**	**Catawba County Wildlife Club Registered Heritage Area (EO 12) The Nature Conservancy Conservation Easement (EO 270).**
7	NC	Catawba	031	C?	US 321, southeast Hickory	1,202 (2010)	161 (2010)	161 plants within NCDOT R-O-W (Bassette 2016).
8	**NC**	**Catawba**	**96.184,** 96.038 96.039	**A**	**Murrays Mill/Upper Balls Creek**	**~9,150 (2005)**	**11,860 (2013)**	**Fee title by NCDOT (~34 acres).**
9	**NC**	**Cleveland**	100.014, **100.049, 100.050, 100.051, 100.073, 100.074 100.149, 100.233**	**A**	**Broad River/Sandy Run Natural Areas (aka "Broad River Tract")**	**~33,500 (2001-2015)**	**32,702 (2015)**	**Fee title by Broad River Greenway (1,000 acres).**

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
			100.236, 100.237 **100.238, 100.239 100.240, 100.241,** 100.246					
10	NC	Cleveland	208	A?	Buffalo Creek: Potts Creek	3,572 (2007)		Awaiting verification that plants are protected in NCDOT R-O-W. Protection unconfirmed.
11	NC	Cleveland	211.072, 211.194		First Broad River: Hop-Hornbeam Natural Area	1,965 (2000)		Awaiting verification that plants are protected in NCDOT R-O-W. Protection unconfirmed.
12	NC	Cleveland	214.201, **214.202, 214.203,** 214.204, **214.205, 214.209,** 214.212, **214.213,**	A	Buffalo Creek: tributaries north and south of SR2047	6,447 (200-2007)		Awaiting verification that plants are protected in NCDOT in R-O-W, bold in EO column. Protection unconfirmed (EO 202, 203, 205, 209, 213).
13	NC	Cleveland	216.028, 216.196, 216.197, 216.198, **216.199, 216.200**	A	Buffalo Creek: Kings Mountain Reservoir	3,310 (200-2016)	~500? (2000-2007) (awaiting updates)	Awaiting verification that plants are protected in NCDOT in R-O-W, bold in EO column. Protection unconfirmed (EO 199, 200).
14	NC	Cleveland	157	AB	First Broad River: Crooked Run Creek	330 (2010)		None of the population is protected within NCDOT R-O-W, determined too far away from roadside, DOT stopped monitoring in 2010 (Bassette 2016).
15	**NC**	**Cleveland/ Rutherford**	**276**	**A**	**Cliffside Steam Station**	**39,545 (2016)**	**~39,545 (2016)**	**Voluntary agreement with Duke Energy; protected acreage unknown.**
16	NC	Lincoln	261.252, 261.259, 261.263	B	Lincoln County Airport and Leepers Creek	7,032 (2005-2006)		Not protected.
17	NC	Polk	023	A	Mills Creek Forest and Seep	1,459 (2016)		Not protected.

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
18	**NC**	**Polk**	**125**	**A**	**Broad River: New Hope Springhead Swamp**	**12,235 (2016)**	**1,000-3,000 estimated (2016)**	**New Hope Springhead Swamp Registered Heritage Area (voluntary conservation agreement).**
19	**NC**	**Rutherford**	**154**	**C**	**Second Broad River (Forest City Industrial Complex)**	**2,576 (2016)**	**2478 (2008)**	**Deed restrictions (12 acres). Significant threats from industrial development, invasive exotics, erosion, sedimentation in a fragmented landscape.**
20	**NC**	**Rutherford**	99.009, 99.010, 99.037, 99.052, 99.053, 99.055, 99.061, 99.063, 99.075, **99.076,** 99.079, 99.090, 99.121, **99.172,** 99.181, 99.182, 99.249-.251, 99.267, 99.268	**A**	**Broad River: Hensons Creek Ravine, Brice Rare Plant Site, Sandy Mush Outcrop**	**106,940 (2016)**	**~200-250 (2007-2012)**	**Parris Heartleaf Registered Heritage Area (voluntary conservation agreement on subEO 076 and 172).**
21	NC	Rutherford	176.167-176.170	A	Broad River: Cleghorn Creek Tributary/US221	6,750 (2016)		Not protected.
22	NC	Rutherford	177.016, 177.107, 177.122, 177.063, 177.164, 177.165, 177.166	A	Broad River: Floyds Creek, Long Branch	12,687 (2008-2016)		Not protected.
23	**NC**	**Rutherford**	247.013, 247.056, 247.080, **247.106,** 247.114, 247.115, 247.173, 247.174, **247.286**	**A**	**Broad River: Floyds Creek (aka New Bethel Rare Plant Site)**	**~5,480 (2003-2015)**	**4,873 (2015)**	**Tate Conservation Easement (8 acres) (SubEOs 106 and 286).**
24	**SC**	**Cherokee**	**016, 017, 018**	**BC**	**Cowpens Battlefield**	**2,823 (2016)**	**2,823? (2016)**	**National Park Service, National Battlefield.**

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
25	SC	Greenville /Spartanburg	002, 004, 024, 032, 033, 036, 038, 039, 040, 041, 042, 049, 050, 054	Various AB-BD	South Pacolet River and tributaries	5,205 (1991-1998)		Not protected.
26	**SC**	**Spartanburg**	**011, 014, 026--028, 047, 048, 057**	**Various AB-BD**	**Peters Creek Heritage Preserve**	**3,306 (2016)**	**3,306 (2016)**	**State Heritage Preserve (194 acres).**
27	**SC**	**Spartanburg**	**007, 029**	**BD, H?**	**Blalock Reservoir**	**3,505 (2016)**	**3,505? (2016)**	**Restrictive covenants (protected acreage unknown); significant threats to remaining population.**
28[6]	**NC**	**Lincoln**	302.046, **302.262**	**A**	**Rhyne Preserve**	**19,880 (2016)**	**19,873 (2016)**	**Rhyne Preserve (fee title by Catawba Lands Conservancy).**

[1]This table was replicated in the same format and populations as Table B.2 from the most recent USFWS five-year Review of *Hexastylis naniflora* (USFWS 2010) for comparison of changes since the time of the five-year review. Populations that are not believed to contain over 1,000 rosettes but were included in the original Table B.2 are included here, but the "NHP EO rank" and in the "Latest estimate of population size" reflects the smaller size.

[2] In the case of partially protected populations, the column "NHP EO numbers" indicates the specific portions of the population afforded protection in bold font.

[3]NHP EO numbers use the following format: Principal EO.SubEO. Only one number is listed if it is a stand-alone principal EO.

[4]NHP EO rank specifications are defined in Appendix B2. In cases involving principal/sub EOs, only the rank for the principal EO is given.

[5] EO ranks with two letters indicate a degree of uncertainty within the range provided (e.g. a rank of "AB" indicates possibly excellent to good viability).

[6]Population that is currently estimated to have over 1,000 rosettes that was not known to be large populations in 2010 have been added to this table.

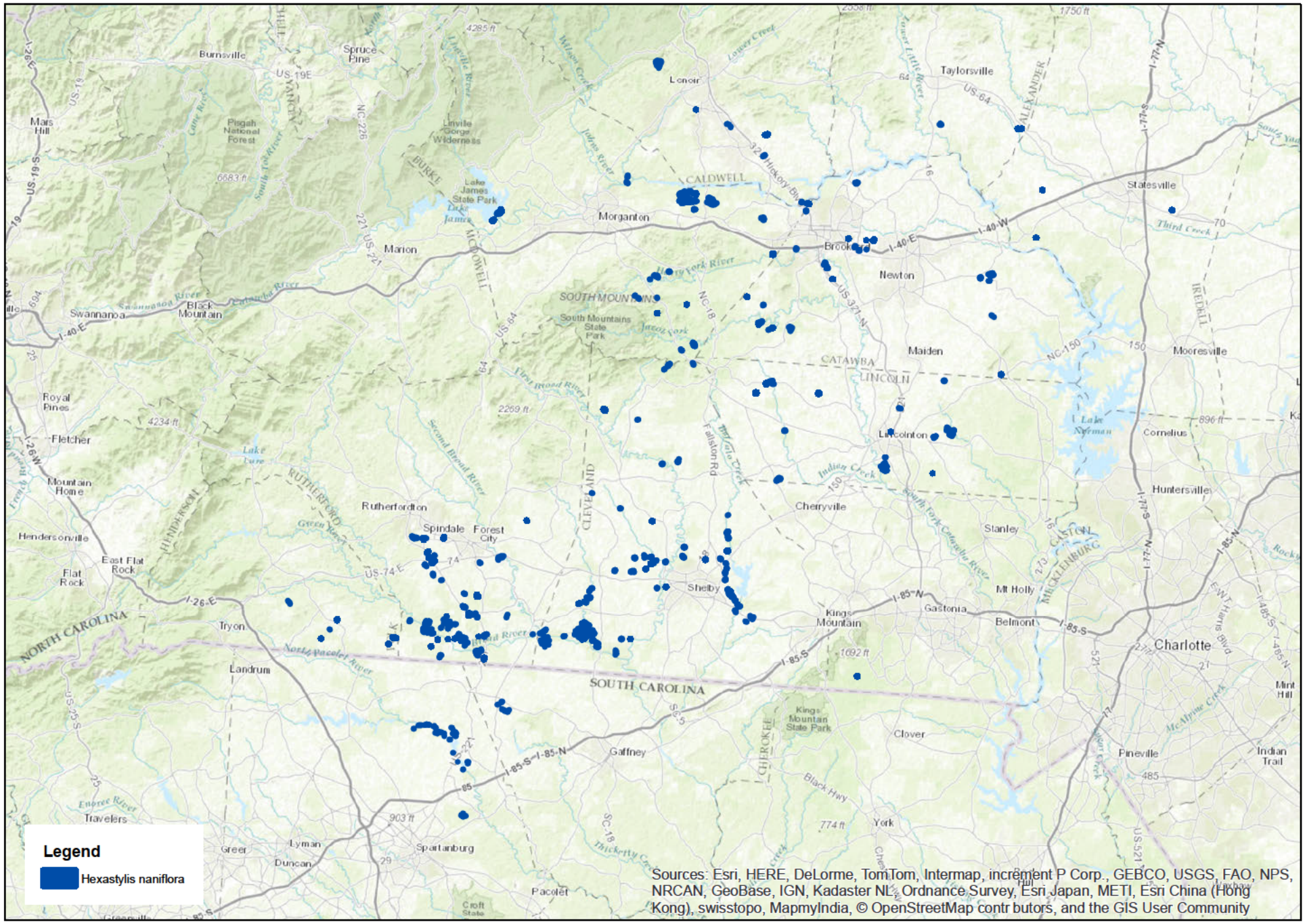
Table A3: Protected populations of *Hexastylis naniflora* on managed areas in North and South Carolina.

Parent EO	Sub EO	EO Rank	County	Site	Managed area	Owner	Nature of Protection
North Carolina							
44	NA	AB	Caldwell	Little Gunpowder Creek Rare Plant Site 1 and transplants	NCDOT Mitigation Site	Private individual	None
77	NA	CD	Caldwell	Catawba River: Gunpowder Creek, tributary approximately 3 miles N of Granite Falls.	NCDOT Mitigation Site	NCDOT	Portion of population protected on land owned by DOT
96	184	A	Catawba	Catawba River: Murrays Mill/Upper Balls Creek Natural Area (Sub EO of EO 096)	Murrays Mill Conservation Site, NCDOT Mitigation Site	NCDOT	
99	76 172	BC D	Rutherford	Broad River: Big Horse Creek, Parris Tract	Parris Heartleaf RHA	Joyce and Howard Parris	Registry Agreement
100	49 50 51 73 74 149 233 238 239 240 241	A A A A B A D A D F D	Cleveland	Broad River/Sandy Run Natural Areas: Mouth of Sandy Run Creek, NC DOT sites CC and DD (Sub EO of EO 100).	Broad River Greenway, NC Div. of Mitigation Services Easement, NCDOT Mitigation Site	Cleveland County	Majority of parent EO 100 is protected
274	NA	A?	Cleveland	Broad River/Sandy Run Natural Areas	Broad River Greenway	Cleveland County and Town of Boiling Springs	None
125	NA	A	Polk	Broad River: Mckinney Creek, New Hope Springhead Swamp	New Hope Springhead Swamp (Barefield) RHA	Danny Barefield	Registry Agreement
183	NA	CD	Catawba	Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground	NC Div. of Mitigation Services Easement	Private individuals	Partially protected on Mitigation Services Easement
217	191 192	D C	Cleveland	Broad River: Brushy Creek, tributary north of SR 1308, BYP Sites 5,6, & 7	NCDOT Mitigation Site	NCDOT	None

Parent EO	Sub EO	EO Rank	County	Site	Managed area	Owner	Nature of Protection
227	NA	A	Caldwell	Peaked Top Rare Plant Site	Foothills Conservancy of North Carolina Easement	Caldwell County	Conservation Easement
243	12	A	Catawba	Catawba Wildlife Club, sub EO of EO 243	Catawba County Wildlife Club RHA	Catawba County Wildlife Club, Harry and Jo Ann Wilfong	Registry Agreement
243	270	C?	Catawba	South Fork Catawba River: Jacob Fork, Jacob Fork West	The Nature Conservancy Easement	Private individual	Conservation Easement
247	106 286	A B	Rutherford	Broad River: New Bethel Plant Site; Tate Conservation Easement Transplant site	NCDOT Mitigation Site	Robert and Carolyn Tate	Tate Conservation Easement
271	NA	C?	Catawba	Pott Creek	The Nature Conservancy Easement	Private individual	Conservation Easement
287	NA	E	Polk	Fox Knoll Farm	Pacolet Area Conservancy Easement	Edward F. Cochran	Conservation Easement
302	262	A	Lincoln	Rhyne Conservation Preserve	Catawba Lands Conservancy Preserve, NC Clean Water Management Trust Fund Easement, Catawba Lands Conservancy Easement	Catawba Lands Conservancy, private individuals,	Preserve and Conservation Easement
303	NA	AB	Burke	Smith Cliff/Henry Fork River	Foothills Conservancy of North Carolina Preserve, Smith Cliff/Henry Fork River RHA	Foothills Conservancy of North Carolina	Registry Agreement and Preserve
307	188	E	Cleveland	First Broad River: Beaverdam Creek, tributary N of SR 1316 and W of SR 1315 (Plato Lee Road), BYP sites 1,2, & 3	NCDOT Mitigation Site	NCDOT	Partially protected on DOT mitigation site
South Carolina							
016 017 018		BC	Cherokee	Cowpens National Battlefield	Cowpens National Battlefield	National Park Service	National Battlefield
011 014 026 027 028 047		AB AB BD BD BD U	Spartanburg	Peters Creek Preserve	Peters Creek State Heritage Preserve	State of SC	State Heritage Preserve

Parent EO	Sub EO	EO Rank	County	Site	Managed area	Owner	Nature of Protection
048 057		U BD					
007 029		BD H?	Spartanburg	Blalock Reservoir	Blalock Reservoir	Private individuals	Restrictive covenants by Spartenburg Water System

Figure A1: Range of *Hexastylis naniflora*



Appendix B1: Principal- and Sub-Element occurrence records and populations as defined for the purposes of this review (USFWS 2010).

This appendix and methodology was originally written as Appendix C.1 in the U.S. Fish and Wildlife Service five-year review for *Hexastylis naniflora* (USFWS 2010). For this review, NCNHP sought to utilize the same methodology as was previously used, so that data can be compared consistently. As stated in the USFWS five-year review, "many of those working with *Hexastylis naniflora* have used the terms "sub site," "site," "location," "occurrence" (often, but not always, in reference to Natural Heritage Program Element Occurrence Records), and "population" interchangeably, while others have aggregated sites into populations according to subjective criteria which have never been explicitly defined. This has generated considerable discrepancies among sources with respect to the number of known populations within a given area (or across the species' range), to the extent that numbers are not comparable from one source to the next. The tendency to treat each location as a separate population also artificially inflates the actual number of populations known. This review attempts to avoid this problem by refraining from the use of the term "population" unless accompanied by clearly defined criteria for aggregating smaller areas ("sites," "locations," or "occurrences") into "populations."" (USFWS 2010)

"When the species was federally listed in 1989, there were a total of 22 NHP element occurrence (EO) records in the combined databases of the NC and SC Heritage Programs (NCNHP and SCDNR, respectively). Four of the populations known and addressed in the 1989 Federal Register listing notice had not yet been assigned EO numbers by the Natural Heritage Programs in 1989." (USFWS 2010)

In 2016, there are a total of 293 NHP EO records for *Hexastylis naniflora* in the databases managed by NCNHP and SCDNR. However, this number does not accurately represent the number of populations of the species, because in some instances discrete EOs have been mapped in very close proximity to one another, whereas in other cases a single EO may consist of more than one spatially discrete aggregation of plants. "In recent years, NatureServe and its member Natural Heritage Programs have devised mapping standards to balance the need for fine-scale, highly site-specific EO records (required for monitoring and management) with the need to aggregate these records in meaningful units of conservation interest that may approximate biological populations." (NatureServe 2002) "Since USFWS does not maintain its own database of known locations of *Hexastylis naniflora*, it regards the NHP databases as the best repository for this information." (USFWS 2010)

During 2015-2016, NCNHP reviewed all NC EOs of *Hexastylis naniflora*, making mapping revisions where necessary, to improve all records in accordance with NatureServe mapping protocols. As of August 2016, NCNHP has 27 parent EOs and another 64 stand-alone EOs of *Hexastylis naniflora*. "Principal or stand-alone EOs can be thought of as proxies for populations in the absence of species-specific information on pollination and dispersal distances. For purposes of this review, we regard these 27 parent and 64 extant stand-alone EO records as 91 populations of the species in North Carolina.

As of 2016, SCDNR has not yet aggregated its records for the species into principal and stand-alone EOs. As a result, the 59 records currently mapped for the species in South Carolina often include several records

in sufficiently close proximity to one another that they should be considered a single population. Applying a buffer of 2 km (the default and minimum separation distance according to NatureServe's data standard) to these records reveals a maximum of 22 spatially discrete aggregations of sites in South Carolina. These aggregations separated by 2 km are regarded as 22 populations for the purposes of this review (USFWS 2010).

Therefore, for the purposes of this review, the current range of *Hexastylis naniflora* has been defined as consisting of (91 +22=) 113 spatially discrete populations of the species.

Reference:

NatureServe. 2002. Element Occurrence Data Standard, 6 February 2002. NatureServe, Arlington, Virginia. Accessed at http://www.natureserve.org/library/deliminting_plant_eos_Oct_2004.pdf , August 2016.

Appendix B2: NCNHP *Hexastylis naniflora* Scorecard for NC populations 8/29/2016

Organized Alphabetically by Species, then sorted by EO Rank and Principal EO number.

Num	Rank	Site or location	County	Last OBS
Hexastylis naniflora	**G3 S3 LT T**			
23.000	A	Mill Creek Forest and Seep	NCPOLK	2016-05-13
29.000	A	Island Creek Heath Bluff	NCBURK	2016-05-24
96.000	A	Murrays Mill/Upper Balls Creek Natural Area	NCCATA	2013-10-30
96.038	CD	Catawba River: Deal Property (Sub EO of EO 096)	NCCATA	1996-06
96.039	D	Murrays Mill/Upper Balls Creek Natural Area	NCCATA	2002-04-18
96.184	A	Murrays Mill/Upper Balls Creek Natural Area	NCCATA	2013-10-30
99.000	A	Big Horse Creek Rare Plant Site	NCRUTH	2015-05-19
99.009	AB	Hensons Creek Natural Area	NCRUTH	2005-03-05
99.010	A	Kudzu Farm Rare Plant Site	NCRUTH	2014-05-20
99.037	C	Broad River: Hunter Road (Sub EO of EO 099) ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2005
99.052	C	Hensons Creek Natural Area	NCRUTH	2005-03
99.053	D	Broad River: McKinney Bridge (This is a sub EO of 099).	NCRUTH	2003-05
99.055	AB	Broad River: Richardson Creek, tributary east of SR 1111 and north of Hayes Lake (Sub EO of EO 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2016-05-25
99.061	B	Broad River: Unnamed tributary at SR 1115 & 1116 (This is a sub EO of 099).	NCRUTH	2002-02-03
99.062	C	Broad River: Richardson Creek, tributary about 0.9 mile up stream from its confluence with the Broad River (Sub EO of 099).	NCRUTH	2002-04-21
99.063	D	Broad River: Hayes Lake (This is a sub EO of 099).	NCRUTH	2001-07-31
99.075	A	Brice Rare Plant Site	NCRUTH	2013-07-17
99.076	BC	Big Horse Creek Rare Plant Site	NCRUTH	2015-05-19
99.079	C	Broad River: Richardson Creek, Riverside Church (This is a sub EO of EO 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2012-05
99.090	D	Broad River: Richardson Creek, tributary near SR 1122 (this is a sub EO of 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2003-03-02
99.121	B	Broad River: Dills Creek, unnamed tributary west of the creek (Sub EO of EO 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2004-05-15
99.172	D	Big Horse Creek Rare Plant Site	NCRUTH	2012-03-12
99.181	AB	Broad River: Dills Creek, unnamed tributary south of Kudzu Rare Plant Site (sub EO of 099). ; USFWS Flex Fund Monitoring Site 2 (in part)	NCRUTH	2012-Spring
99.182	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.249	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.250	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.251	A?	Hensons Creek Natural Area	NCRUTH	2001-05-13
99.267	CD	Kudzu Farm	NCRUTH	2006-07-06
99.268	D	Kudzu Farm	NCRUTH	2006-07-06

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
100.000	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-17
100.014	C?	Broad River/Sandy Run Natural Areas	NCCLEV	2009-06
100.049	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-28
100.050	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-02
100.051	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-11
100.073	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-11
100.074	B	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-12
100.149	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-15
100.233	D	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-01
100.235	CD	Broad River: Tributary N of Broad River and SE of Lake Houser	NCCLEV	2001
100.236	C	Broad River/Sandy Run Natural Areas	NCCLEV	2001
100.237	E	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-15
100.238	A	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-17
100.239	D	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-28
100.240	F	Broad River/Sandy Run Natural Areas	NCCLEV	2012-05-17
100.241	D	Broad River/Sandy Run Natural Areas	NCCLEV	2012-04-03
100.246	D	Broad River/Sandy Run Natural Areas	NCCLEV	2001
–				
118.000	A	Big Island Carolina Hemlock Bluff	NCRUTH	2004-08-06
125.000	A	New Hope Springhead Swamp	NCPOLK	2016-05-13

176.000	A	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2016-05-20
176.167	A	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2005-04-06
176.168	A	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2005-03-30
176.169	D	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2016-05-18
176.170	C	Davenport Road/Mountain View Rare Plant Site	NCRUTH	2016-05-18
–				

177.000	A	Broad River: Floyds Creek, Long Branch (Parent EO of sub EOs: 016, 107, 122, 163,164,165,& 166) ; USFWS Flex Fund Monitoring Site 9 including sub records 16, 107, 163, 164, 165, 166	NCRUTH	2016-05-11
177.016	F	Broad River: Floyds Creek, Long Branch (Sub EO of EO 177) ; NCDOT Transplant location ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2004
177.107	B	Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & SW of US 221 (sub of 177). ; NCDOT R-2233 A and B ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2008
177.122	B?	Broad River: Floyds CrK, Long Branch, tributary 0.3 mile SE of Huntley Church & NE of US 221 (sub of 177). ; NCDOT TIP: R-2233	NCRUTH	2008
177.163	B	Broad River: Floyds Creek, Long Branch, headwaters near Shiloh (Sub of 177). ; NCDOT TIP: R-2233 ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2016-05-11
177.164	A	Broad River: Floyds Creek, Long Branch, unnamed tributary 1.2 mile NW of Danieltown (Sub of 177) ; NCDOT TIP: R-2233A&B ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2016-05-11
177.165	C	Broad River: Floyds Creek, Long Branch, unnamed tributary 1.7 miles NW of Danieltown (Sub of 177). ; NCDOT TIP: R-2233 ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2005-04-05

Num	Rank	Site or location	County	Last OBS
177.166	CD	Broad River: Floyds Creek, Long Branch, tributary 1.7 miles NW of Danieltown and NE 0.3 mile from US 211 (Sub of 177). ; NCDOT TIP: R-2233 ; USFWS Flex Fund Monitoring Site 9 (in part)	NCRUTH	2005-03-31
–				

178.000	A	Catawba River: Hoyle Crk-Micol Crk, Lovelady (parent EO of 159, 160, 161, 254, 255, 256, 280-284)	NCBURK	2013-05-14
178.159	A	Catawba River: Hoyle Crk-Micol Crk, Micol Creek tibutary near SR 1547 (Sub EO of 178) ; NCDOT TIP: B-3621 bridge replacement on SR 1547 over Michol Creek ; NCDOT TIP: R-2824	NCBURK	2011-11-02
178.160	A	Catawba River: Hoyle Crk-Micol Crk, Lovelady 2 (east) (Sub EO of EO 178). ; NCDOT TIP: R-2824 SR 1546 Lovelady Road	NCBURK	2013-05-14
178.161	A	Catawba River: Hoyle Crk-Micol Crk, Lovelady 1(west): (Sub EO of EO 178). ; NCDOT TIP: R-2824 SR 1546 Lovelady Road	NCBURK	2009-04-07
178.254	D?	Catawba River: Hoyle Crk-Micol Crk, E bank of Hoyle Creek, East Burke High School Transplant Area (Sub EO of EO 178)	NCBURK	2010-05-26
178.255	D	Catawba River: Hoyle Crk-Micol Crk, ravine E of Hoyle Crk, East Burke High School (Sub EO of EO 178)	NCBURK	2006-06
178.256	C?	Catawba River: Hoyle Crk-Micol Crk, tributary E of Hoyle Crk, East Burke High School transplant area (Sub EO of EO 178)	NCBURK	2010-05-26
178.280	C	Catawba River: Hoyle Creek, Lovelady 9 (Sub EO of EO 178) ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.281	E	Catawba River: Hoyle Crk-Micol Crk, Lovelady 12 and 13 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.282	E	Catawba River: Hoyle Crk-Micol Crk, Lovelady 10 and 11 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.283	E	Catawba River: McGalliard Creek, Lovelady 14 and 15 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.284	E	Catawba River: McGalliard Creek, Lovelady 16 (Sub EO of EO 178). ; NCDOT TIP: R-2824	NCBURK	2009-04-07
178.310	A	Mcgalliard Creek Slopes; Lake Rhodhiss	NCBURK	2016-04-05
–				
208.000	A	Buffalo Creek: Potts Creek, tributaries north of I-74, Shelby BYP Sites 32-35 (TIP R-2707, R-2824) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2012-03-15

211.000	A	First Broad Hop-Hornbeam Natural Area	NCCLEV	2002-04-26
211.072	D	First Broad Hop-Hornbeam Natural Area	NCCLEV	2002-04-26
211.194	A	First Broad River: unnamed tributary, Shelby Bypass Sites 10, 11, & 12 (Sub EO of EO 211) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-11-01
–				

214.000	A	Buffalo Creek: Tributaries N and S of SR 2047 (parent EO of sub EOs: 201-205, 209, 212, and 213)	NCCLEV	2012-03-15
214.201	D	Buffalo Creek: Tributary S of SR 2047, BYP Sites 26 & 27 (Sub EO of EO 214) ; NCDOT TIP: R-2707	NCCLEV	2000-10-25
214.202	A	Buffalo Creek: Ravine north of SR 2047, BYP site 24 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-25
214.203	B	Buffalo Creek: 3rd Tributary S of SR 2947, BYP Sites 28 and 29 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2007-04-10
214.204	A?	Buffalo Creek: S of SR 2128/Johnson Rd, proposed Shelby Bypass site 31 (Sub EO of EO 214). ; NCDOT TIP: R-2707	NCCLEV	2000-10-03

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
214.205	D	Buffalo Creek: North of SR 2128/Johnson Rd, BYP Site 30 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-03
214.209	BC	Buffalo Creek: Tributary E of the County Fairgrounds, BYP Site 22 (Sub EO of EO 214) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-26
214.212	D	Buffalo Creek: Slope along Tributary just N of SR 2047, BYP Site 23 (Sub EO of EO 214). ; NCDOT TIP: R-2707	NCCLEV	2000-10-26
214.213	CD	Buffalo Creek: Ravine just S of SR 2047, BYP Site 25 (Sub EO of EO 214). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2012-03-15
–				

216.000	A	Buffalo Creek: Kings Mountain Reservoir:, tribs N & S of SR 2068 & E of US 180 (parent of 28, 197-200)	NCCLEV	2016-08-03
216.028	B	Buffalo Creek Rare Plant Site	NCCLEV	2016-08-03
216.196	D	Buffalo Creek: Friendship Chapel and tributary to Catawba River (Sub of 216) ; NCDOT TIP: R-2707	NCCLEV	2006-04-29
216.197	A	Buffalo Creek: Kings Mountain Reservoir, tributary N of SR 2068, BYP Site 13 (Sub EO of 216). ; NCDOT TIP: R-2707	NCCLEV	2000-11-01
216.198	B	Buffalo Creek: Kings Mountain Reservoir, tributary S of SR 2086; BYP Site 14 (Sub of 216) ; NCDOT TIP: R-2707	NCCLEV	2007-04-10
216.199	B	Buffalo Creek: Kings Mountain Reservoir: tributary E of US 180, BYP Sites 15-19 (Sub of 216). ; NCDOT TIP: R-2707	NCCLEV	2007-04
216.200	D	Buffalo Creek: Kings Mountain Reservoir, Tributary N of SR 2033, BYP Sites 20 &21 (Sub EO of 216) ; NCDOT TIP: R-2707	NCCLEV	2000-04-10
–				
227.000	A	Peaked Top Rare Plant Site	NCCALD	2014-04-19

247.000	A	New Bethel Rare Plant Site	NCRUTH	2015-04-23
247.013	D	Sandy Mush Outcrop	NCRUTH	2005-05
247.056	D	Broad River: Floyds Creek (sub EO of EO 247)	NCRUTH	2002-04-21
247.080	D	Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 and S of SR 2125 (sub of 247)	NCRUTH	2012-07
247.106	A	New Bethel Rare Plant Site	NCRUTH	2015-04-23
247.114	D	Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and N of SR 2125 (sub EO of 247) ; NCDOT TIP: R-2233	NCRUTH	2010-01-27
247.115	C	Broad River: Floyds Creek near Harris, unnamed tributary E of US 221 and S of SR 2125 (Sub of 247).	NCRUTH	2005-04
247.173	D	Broad RIver: Floyds Creek, tributary between Floyds Church and Jerusalum Church (Sub of 247). ; NCDOT TIP: R-2233 ; NCDOT TIP: R-2824	NCRUTH	2005-04
247.174	D	Broad River: Floyds Creek near Harris, unnamed tributary W of US 221 & N of SR 2125 (sub EO of 247). ; NCDOT TIP: R-2233	NCRUTH	2010-01-27
247.286	B	New Bethel Rare Plant Site	NCRUTH	2015-04-22
–				
276.000	A	Cliffside Steam Station ; South Shore Cliffside Steam Station Ash Basin Transplant ; USFWS Flex Fund Monitoring Site 7	NCCLEV NCRUTH	2016-06-20

302.000	A	Rhyne Conservation Preserve	NCLINC	2016-05-05
302.047	D	NC DOT project R-617C ; South Fork Catawba River: tributary at NC 150 (Sub EO of EO 302)	NCLINC	2005-05-11
302.262	A	Rhyne Conservation Preserve	NCLINC	2016-05-05

Num	Rank	Site or location	County	Last OBS
–				
311.000	A	Collinsville (Hughes) Creek Slopes	NCPOLK	2016-08-04
312.000	A	Richardson Creek tributary above Toms Lake	NCRUTH	2016-08-03

232.000	A?	Buffalo Creek Rare Plant Site	NCCLEV	2012-03-16
232.046	A	Buffalo Creek Rare Plant Site	NCCLEV	2005-11-15
232.231	D	Buffalo Creek Rare Plant Site	NCCLEV	2012-03-16
–				
274.000	A?	Broad River/Sandy Run Natural Areas	NCCLEV	2012-03-03
44.000	AB	Little Gunpowder Creek Rare Plant Site 1	NCCALD	2011-05-02
157.000	AB	First Broad River: Crooked Run Creek, tributary near SR 1519 ; NCDOT Division 12 project at SR 1519 ; NCDOT TIP: R-2824	NCCLEV	2010-12-01

243.000	AB	Jacob Fork West Corridor	NCCATA	2012-07
243.012	A	Jacob Fork West Corridor	NCCATA	1995
243.242	D	Jacob Fork West Corridor	NCCATA	2005-05
243.269	B	Jacob Fork West Corridor	NCCATA	2007
243.270	C?	Jacob Fork West Corridor	NCCATA	2012-07
–				

245.000	AB	Floyds Creek Tributary Rare Plant Site	NCRUTH	2010-01-27
245.091	D	Broad River: Floyds Creek and SR 1116 (sub EO of EO 245)	NCRUTH	2012-07
245.113	C	Floyds Creek Tributary Rare Plant Site	NCRUTH	2010-01-27
245.175	C	Floyds Creek Tributary Rare Plant Site	NCRUTH	2010-01-27
–				
287.000	AB	Fox Knoll Farm	NCPOLK	2016-08-04
303.000	AB	Smith Cliff/Henry Fork River	NCBURK	2015-04-28

217.000	B	Broad River: Brushy Creek, Tributaries N of SR 1308 and E of NC 226, (parent EO of Sub EOs 190,191,192,193, & 305).	NCCLEV	2015
217.190	F	Broad River: Brushy Creek,Tributary just north of CSX rail line, BYP Site 4 (Sub EO of EO 217). ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2000-10-27
217.191	D	Broad River: Brushy Creek, Tributary north of SR 1308, BYP Sites 5,6,&7 (Sub EO of EO 217) ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2013-06-03
217.192	C	Broad River: Brushy Creek, Ridge south of Creek, BYP Site 8 (Sub EO of EO 217) ; NCDOT TIP: R-2707	NCCLEV	2000-10-27
217.193	C	Broad River: Brushy Creek, Ridge southwest of creek, near NC 226, BYP site 9 (Sub EO of 217) ; NCDOT TIP: R-2707	NCCLEV	2000-10
217.305	CD	Washburn Switch Business Park	NCCLEV	2015-09-16
–				

226.000	B	Catawba River: Lake James (parent EO of Sub EOs: 045, 222, 223, 224, and 225)	NCBURK	2006-10-25
226.045	D	Catawba River: Lake James, near SR 1223 Bridge (sub EO of EO 226). ; NCDOT 1998 bridge replacement project	NCBURK	2005-05
226.222	CD	Lake James, SW of Bridge downstream from Powerhouse (Sub of 226)	NCBURK	2006-10-25
226.223	X	Lake James, Paddy Creek, unnamded tributary NE of dam (Sub of 226)	NCBURK	2006-10-25

Num	Rank	Site or location	County	Last OBS
226.224	BC	Lake James, Paddy Creek, SE of the dam (Sub of 226)	NCBURK	2006-10-25
226.225	A	Lake James, Linville Dam (sub EO of EO 226)	NCBURK	2005-10-04
–				

252.000	B	South Fork Catawba River, Henry Fork, unnamed tributaries and US 321 (parent of 019 and 020).	NCCATA	2007
252.019	D?	NCDOT TIP: R-0085 US 321 Bypass site id # 1, 2, and 3 ; NCDOT TIP: R-2824 ; South Fork Catawba River: Henry Fork, Highway 70 Sites 1-3 (Sub of 252)	NCCATA	2007
252.020	B	NCDOT TIP: R-0085 US 321 Bypass site id # 4 ; NCDOT TIP: R-2824 ; South Fork Catawba River: Henry Fork, Large unnamed tributary and US 321 (Sub of 252)	NCCATA	2007
–				

261.000	B	Leepers Creek Heartleaf Site	NCLINC	2006-06-15
261.258	B	Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 05 (Sub EO of EO 261)	NCLINC	2006-06-15
261.259	B	Lincoln-Lincoln County Airport and Leepers Creek, Airport Runway 23 (Sub EO of EO 261)	NCLINC	2005-10
261.263	E	Leepers Creek Heartleaf Site	NCLINC	2001-04-04
–				

295.000	B	Hickory Area: Parent EO	NCBURK NCCALD NCCATA	2016-03-20
295.021	A	Hickory Area, Catawba River: Geitner Park, behind Boy Scout Building [Proposed Bike Path] (Sub EO of EO 295)	NCBURK	2005-05-11
295.294	C	Hickory Area: Bud Geitner Park Transplant Site (Sub EO of EO 295)	NCBURK	2016-03-20
295.313	E	NCDOT TIP U-4700 US 321 corridor	NCCATA	2012
295.314	E	NCDOT TIP U-4700	NCCALD	2012
–				
130.000	B?	Kross Keys Natural Area	NCPOLK	2005-05-18
304.000	B?	Simms Hill/Little River Uplands	NCBURK	2015-05-05
71.000	BC	Knob Creek Natural Area	NCCLEV	2005-05-05
92.000	BC	Second Broad River: Webbs Creek, headwaters	NCRUTH	2003-04-20
272.000	BC	No Business Creek, Boyd Tract	NCCLEV	2007-04-20
57.000	C	Second Broad River: Morrow Ceek, tributary NW of RR ROW, about 0.4 miles NE of Alt 221	NCRUTH	2001-05-18
59.000	C	Third Creek Rare Plant Site	NCALEX	2010-03-21

97.000	C	Sandy Run/Cliffside Natural Area	NCCLEV	2002-04-25
97.017	D	Broad River: Sandy Run Creek, N of SR 1003 (Sub EO of EO 097).	NCCLEV	1995-1996
97.018	D	Broad River: Sandy Run Creek, SW of SR 1164 (Sub EO of EO 097)	NCCLEV	2001-04-03
97.069	U	Sandy Run/Lovelace Natural Area	NCCLEV	2002-04-25
97.230	D	Sandy Run/Cliffside Natural Area	NCCLEV	2002-04-25
–				
151.000	C	Broad River: Richardson Creek, headwaters S of Shiloh Road and E of Danieltown	NCRUTH	2002-07-04
154.000	C	Facebook Site ; Second Broad River: 0.5 miles south of Morrow Creek ; USFWS Flex Fund Monitoring Site 5	NCRUTH	2016-05-18

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
207.000	C	Buffalo Creek: Tributary south of I-74 & east of Creek, BYP site 48 ; NCDOT TIP: R-2707	NCCLEV	2000

248.000	C	Jonas Road Rare Plant Site	NCRUTH	2005-04-12
248.040	C	Jonas Road Rare Plant Site	NCRUTH	2005-04-12
248.054	D	Broad River: McKinney Creek, Jebb Lamb Road Bridge (SR 1108) (Sub EO of EO 248).	NCRUTH	2014-05
–				
273.000	C	Catawba River: Unnanmed tributary to Falling Creek	NCCATA	2006-09
275.000	C	Buffalo Shoals Creek ; NCDOT TIP: B-2146 SR 1333 Eufola Road over Buffalo Shoals Creek	NCIRED	2014-05-21
291.000	C	Gunpowder Creek ; NCDOT TIP #R-3437	NCCALD	2010-04-21
298.000	C	Brushy Creek Headwaters	NCCLEV	2014-04-15

307.000	C	First Broad River: Beaverdam Creek tributaries Parent EO	NCCLEV	2006-04-06
307.036	CD	First Broad River: Beaver Dam Creek, unnamed tributary S of the Seaboard RR and E of SR 1315	NCCLEV	1997-06-04
307.187	C	First Broad River: Beaverdam Creek: Ravine just east of SR 1319, BYP sites 37 and 38 ; NCDOT TIP: R-2707	NCCLEV	2001-04-11
307.188	E	First Broad River: Beaverdam Creek, Tributary N of SR 1316 and W of SR 1315 (Plato Lee Road), BYP sites 1,2,&3 ; NCDOT TIP: R-2707	NCCLEV	2000-10-26
307.189	D	First Broad River: Beaverdam Creek, ravine to unnamed tributary S of SR 1314 & W of SR 1313, BYP site 39 ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2006-04-06
–				
308.000	C	Glade Creek, Alexander County	NCALEX	2015-03
31.000	C?	NCDOT TIP: R-2824 ; NCDOT TIP: U-2307C I-40/Startown Road Interchange ; South Fork Catawba River: Clark Creek, tributary near Fairbrook	NCCATA	2010-12-21
229.000	C?	Hogpen Branch transplant area ; Second Broad River: Hogpen Branch	NCRUTH	2005-10-03
271.000	C?	Pott Creek	NCCATA	2012-03-16
33.000	CD	Catawba River: Tributary to Rhodhiss Lake, John's River Waste Management Facility.	NCBURK	1996-05-03
77.000	CD	Little Gunpowder Creek Rare Plant Site 2	NCCALD	2013-05-15

98.000	CD	Cat Square Heartleaf Forest	NCLINC	2012-03-16
98.002	X	South Fork Catawba River: Indian Creek, Reeps Grove Church (Sub EO of EO 098).	NCLINC	1957-04-28
98.003	D	Cat Square Heartleaf Forest	NCLINC	2001-04-02
98.004	CD	Cat Square Heartleaf Forest	NCLINC	2001-04-02
98.060	D	NC DOT TIP: B-2119 ; South Fork Catawba River: Hulls Crossroads (Sub EO of EO 098)	NCLINC	2012-03-16
–				

179.000	CD	South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (parent of 030 and 162)	NCCATA	2012-12-17
179.030	CD	NCDOT TIP: R-2824 ; NCDOT TIP: U-2414A Tate Blvd SE ; South Fork Catawba River: Clark Creek, Miller Branch, Catawba Memorial Hospital (Sub of 179).	NCCATA	2013-06-05
179.162	D	NCDOT TIP: R-2824 ; NCDOT non-TIP Division 12 Project at SR 1473 near Miller Branch ; South Fork Catawba River: Clark Creek, Miller Branch, tributary E of Catawba Memorial Hospital (Sub of 179)	NCCATA	2012-12-17

Num	Rank	Site or location	County	Last OBS
–				
183.000	CD	Catawba River: North Fork Mountain Creek, tributary near Balls Creek Campground	NCCATA	2005-06-07
296.000	CD	Unnamed tributary of King's Mountain Reservoir; east of South Crowders Creek Forests.	NCGAST	2012-03-16
297.000	CD	Beaverdam Creek at First Broad River	NCCLEV	2011
1.000	D	Brushy Creek Bluff	NCCLEV	2001-04-04
8.000	D	First Broad River: Knob Creek, Unnamed Tributary South of Zion Hill Church [Poundingmill Creek] ; Poundingmill Creek (per Gaddy, 1981)	NCCLEV	2002
32.000	D	NCDOT TIP: R-2824 ; NCDOT TIP: U-2528AA I-40/SR 1124 Interchange ; South Fork Catawba River: Henry Fork tributary south of Longview	NCCATA	2013-06-06
48.000	D	Catawba River: Lippard Creek tributary	NCLINC	1999-05-17
58.000	D	South Fork Catawba River: Camp Creek, south SR 1120	NCCATA	2002-04-18
70.000	D	Hicks Hill Bluffs and Forests	NCCLEV	2002-06-28
85.000	D	Buffalo Creek: northeast of SR 1903 ; NCDOT TIP: R-2824	NCCLEV	2005-Spring
87.000	D	Catawba River: Lower Creek: Miller Creek, headwaters near Martin Marietta Materials	NCCALD	2011-11-04

93.000	D	West Shelby Mesic Slope	NCCLEV	2005-05-19
93.034	D	West Shelby Mesic Slope	NCCLEV	2005-05-19
93.035	D	First Broad River: Brushy Creek, unnamed tributary south of SR 1123 (Sub EO of EO 093)	NCCLEV	2001-04-04
–				

101.000	D	Camp Creek Bluff	NCBURK	2002-04-18
101.005	D	Camp Creek Bluff	NCBURK	2002-04-18
101.006	X	Camp Creek North (per Gaddy, 1981) ; South Fork Catawba River: Jacob Fork, Camp Creek North	NCBURK	1981-05
101.180	D	Camp Creek Bluff	NCBURK	1995
–				
158.000	D	NCDOT non-TIP Division 12 road construction project at SR 1115 ; South Fork Catawba River: Jacob Fork, Camp Creek, tributary at SR 1115 ; USFWS Flex Fund Monitoring Site 6	NCCATA	2016-05-24
195.000	D	First Broad River: Hickory Creek, unnamed tributary SE of HWY 18 ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2006-04-06
206.000	D	Buffalo Creek: Ravine N of Creek and SW of I-74, BYP Sites 44, 45, 46, and 47 ; NCDOT TIP: R-2707 ; NCDOT TIP: R-2824	NCCLEV	2007-04-10
219.000	D	Smith Cliff/Henry Fork River	NCBURK	2005-05-06
277.000	D	Hickory: Martin Marietta Quarry	NCCATA	2011-11-04
292.000	D	Forest City: Adjacent to Isothermal Community College	NCRUTH	2010
299.000	D	Lincoln County, SR-1314 (Will Schronce Road) ; NCDOT	NCLINC	2014-04-01
300.000	D	Levan family farm	NCIRED	2013-04
306.000	D	Fanjoy Road Site, Statesville	NCIRED	2015
124.000	D?	Sandy Springs Church Springhead Swamp	NCPOLK	2005-05-18
279.000	D?	Northeast Lincolnton: Unnamed tributary of Walker Branch	NCLINC	2009-04-20
309.000	D?	South Mountains Pleasant Grove Uplands	NCBURK	2016-05-06
15.000	E	Mount Zion Heartleaf Forest	NCLINC	2000-03-31

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Num	Rank	Site or location	County	Last OBS
210.000	E	Catawba River: Drowning Creek, unnamed tributary at SR 1628 ; NCDOT TIP: R-2707	NCBURK	2001-10
264.000	E	Carpenter Creek Heartleaf Site	NCLINC	2001-04-27
265.000	E	June Bug Woods	NCLINC	2000-05-30
266.000	E	Indian Creek Slopes	NCLINC	2001-05-31
293.000	E	Killian Crossroads	NCCATA	2010?
278.000	H	West Fork Brushy Creek	NCCLEV	1980
25.000	U	Hildebran/Henry River Slopes	NCBURK	1985-03
27.000	U	South Fork Catawba River: Henry Fork, Prospect Ridge	NCBURK	1991-Spring
64.000	U	Beaverdam Creek Natural Area	NCCLEV	2002-06-11
89.000	U	South Fork Catawba River: Jacob Fork, Whitener Creek south of Valdese	NCBURK	2003-03-21

117.000	U	First Broad River: Knob Creek, Leeman Gap (parent EO, includes sub EOs 083 & 084)	NCBURK NCCLEV	2003-03-21
117.083	U	First Broad River: Knob Creek: Leeman Gap (south) (Sub EO of EO 117)	NCCLEV	2003-03-21
117.084	U	First Broad River: Knob Creek, Leeman Gap (north) (Sub EO of EO 117)	NCBURK NCCLEV	2003-03-21
–				
11.000	X	South Fork Catawba River: Henry Fork, Pleasant Grove	NCBURK	1981-05

EO Rank: A-Excellent, B-Good, C-Fair, D-Poor, E-Extant, F-Failed to Find, H-Historical, i-Introduced, r-Reintroduced

Appendix B3: NC Natural Heritage Program (NCNHP) Element Occurrence Rank Specifications for *Hexastylis naniflora*

"A" Rank Specifications (excellent viability)
An A-ranked population of *Hexastylis naniflora* should have more than 500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest.

"B" Rank Specifications (good viability)
A B-ranked population of *Hexastylis naniflora* should have 200-500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"C" Rank Specifications (fair viability)
A C-ranked population of *Hexastylis naniflora* should have 100-200 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"D" Rank Specifications (poor viability)
A D-ranked population of *Hexastylis naniflora* should have fewer than 100 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"E" Rank Specifications (extant)
An E-ranked population of *Hexastylis naniflora* is an occurrence that has recently been verified as still existing, but sufficient information for the factors used to estimate viability has not yet been obtained.

"H" Rank Specification (historical)
An H-ranked population of *Hexastylis naniflora* lacks recent field information verifying the continued existence of the occurrence. In the absence of known disturbance and with the habitat still extant, H is generally recommended for occurrences that have not been reconfirmed for approximately 30 or more years.

"F" Rank Specification (failed to find)
An F-ranked population of *Hexastylis naniflora* has not been found despite a search by an experienced observer at a time and under conditions appropriate for the Element at a location where it was previously reported, but the occurrence still might be confirmed to exist at that location with additional field survey efforts. For occurrences with vague locational information, the search must include areas of appropriate habitat within the range of locational uncertainty.

"X" Rank Specification (failed to find)
An X-ranked population of *Hexastylis naniflora* is considered destroyed based on adequate surveys by one or more experienced observers at times and under conditions appropriate for the species at the occurrence location, or other persuasive evidence indicates that the species no longer exists there or that the habitat has been destroyed to such an extent that it can no longer support the species.

“U” Rank Specification (failed to find)
A U-ranked population of *Hexastylis naniflora* cannot be assigned a rank due to lack of sufficient information on the occurrence or the species identification has not been confirmed.

Rank Specifications Justification
The unit of measurement for population size in this species is "clump" (rosette). EO size (as quantified by number of clumps or rosettes) is the primary rank factor. Condition of habitat (vegetation community and structure) and Landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. The species thrives most in undisturbed habitat. However, disturbed lands, that have been logged, grazed, mown, or converted to pasture, orchards, or tree plantations have been found to support remnant patches of *Hexastylis naniflora*. The extent to which this species can withstand disturbance is unknown. Populations in disturbed habitat are considered at risk, with relatively poor viability (C or D). Care should be taken when estimating population size, as population estimates have been found to vary widely from the number counted in population censuses. Specifications are based on largest known populations and expert opinion (including James Padgett, Carolyn Wells, Misty Buchanan (formerly Franklin), and Brenda Wichmann).

Appendix B4: *Hexastylis naniflora* threats assessment summary.

Data extracted from the NatureServe Rank Calculator version 3.186 (Faber-Langendoen et al. 2012) for *Hexastylis naniflora* Global rank.

NatureServe calculator number	Threat	Impact (calculated)		Scope	Severity	Timing	Comments
1	Residential & commercial development	D	Low	Small (1-10%)	Moderate (11-30%) population decline	High (continuing)	Direct & indirect impacts from development
2.2	Wood & pulp plantations	D	Low	Small (1-10%)	Moderate (11-30%) population decline	High (continuing)	Incompatible forestry practices
2.3	Livestock farming & ranching	N/A	Not in timeframe	Small (1-10%)	Slight (1-10%) population decline	Low (long term)	Trampling by cattle
3.2	Mining & quarrying	N/A	Not in timeframe	Small (1-10%)	Slight (1-10%) population decline	Low (long term)	2 occurrences moved due to quarry expansion
4.1	Roads & railroads	D	Low	Restricted (11-30%)	Moderate (11-30%) population decline	High (continuing)	Impacts from road construction, but some of the work is mitigated.
6.1	Recreational activities	N/A	Negligible	Negligible (<1%)	Negligible or <1% population decline	Moderate (short term)	Foot traffic and ORV use
8.1	Invasive nonnative species	C-D	Medium-Low	Restricted - Large (11-70%)	Moderate (11-30%) population decline	High (continuing)	Data show a scope of less than 10% of populations with invasive species, but we believe this threat is considerably unreported.
9.4	Garbage & solid waste	D	Low	Small (1-10%)	Slight (1-10%) population decline	Moderate (short-term)	Dumping on occurrences
11.5	Storms & flooding	D	Low	Small (1-10%)	Slight (1-10%) population decline	Moderate (short-term)	Siltation/erosion

Based on the NatureServe Calculator, the overall threat impact = C (Medium).

Appendix B5:

Element Global Ranking (EGR) Report

Scientific Name Hexastylis naniflora **Element ID** **15335**

Common Name: **Dwarf-flowered Heartleaf**

Global Rank: G3

Subntl. Rank: S3

IDENTIFIERS

Scientific Name: ***Hexastylis naniflora***

Subnational Common Name: Dwarf-flowered Heartleaf

Concept Reference Short Citation: Kartesz 1994

Exemplary Site: Lower Broad River/Sandy Run Natural Areas

POPULATION and EOs

Number of EOs: D=81-300

Comments: In 2016, there were 113 parent or stand-alone EORs in North and South Carolina for Hexastylis naniflora.

Number of EOs with Good Viability: D=Some (13-40) occurrences with Excellent or Good viability

Comments: 30-35 parent or 13 stand-alone EOs of Excellent or Good viability (2016).

Number of Protected EOs: CD

Comments: As of 2016, 10 on managed areas in NC, with several more on NCDOT rights-of-way, awaiting confirmation of protection by NCDOT, 3 protected sites in South Carolina.

Population Size: G=100,000-1,000,000 individuals

Comments: In 2016, the estimated number of rosettes exceeds 300,000 in North and South Carolina, based on recent monitoring of the largest populations.

RANGE

Range Extent: E=5,000-20,000 sq. mi.

Comments: The current reported range is Alexander, Burke, Caldwell, Catawba, Cleveland, Gaston, Iredell, Lincoln, Polk, and Rutherford counties, North Carolina (2016).

Area of Occupancy: E=26-125 4-km2 grid cells

Linear Distancy of Occupancy:

Comments: The total area of occupancy using 4 km sq grid cells is 1,968 sq km, or 123 grid cells.

TREND

Short-Term Trend: Decline of 10-30%

Comments: Estimated decline of 10-30%, with impacts from highway projects, however, other populations appear to be relatively stable, given other observed threats and new sites are still being found (Robinson 2016).

Long-Term Trend: Unknown

Comments:

THREATS

Scope: **Severity:** **Immediacy:**

Threat: C=Medium overall threat impact

Comments: Threats to this species occur at low to moderate levels and include agricultural threats such as incompatible forestry practices and disturbance from cattle, impacts from transportation improvements to roads and highways, damage from recreational activities including foot traffic and ORV use, invasive plant species, residential and commercial development, and siltation and erosion resulting from severe weather.

OTHER FACTORS

Intrinsic Vulnerability:

Comments:

Environmental Specificity: Narrow. Specialist or community with key requirements common.

Comments:

Other Rank Considerations:

NEEDS

Research Needs:

Inventory Needs:

Protection Needs:

RANK

Rank: **G3**

Rank Reasons: This species has a restricted range and is endemic to the upper Piedmont of NC and SC.

Rank Review Date: 26-August-2016

Rank Change Date: 15-March-2004

VERSION

Version Author: M. Franklin (2004), Amoroso (2016), Robinson (2016)

Version Date: 26-August-2016

EXTENSIBLE TAB 1

State Exemplary Site Comments:

Element Subnational Ranking (ESR) Report

Scientific Name Hexastylis naniflora **Element ID** **15335**

Common Name: **Dwarf-flowered Heartleaf**

Global Rank: (find table/field)

Subntl. Rank: S3

IDENTIFIERS

Scientific Name: ***Hexastylis naniflora***

Subnational Common Name: Dwarf-flowered Heartleaf

Concept Reference Short Citation: (do not populate.)

Exemplary Site: Lower Broad River/Sandy Run Natural Areas

POPULATION and EOs

Number of EOs: D

Comments: Sum of parent and stand-alone EORs determined using the Element Occurrence specifications developed for Hexastylis naniflora.

Number of EOs with Good Viability: D

Comments: 20 parent EOs and 13 stand-alone EOs of Excellent or Good viability (2016).

Number of Protected EOs: CD

Comments: 10 on managed areas in NC, with several more on NCDOT rights-of-way, awaiting confirmation of protection by NCDOT (Robinson 2016).

Population Size: G

Comments: In 2015, the estimated number of plants for a subset of 10 monitored North Carolina occurrences was 184,000.

RANGE

Range Extent: E

Comments: The current reported range is Alexander, Burke, Caldwell, Catawba, Cleveland, Gaston, Iredell, Lincoln, Polk, and Rutherford counties, North Carolina (2016).

Area of Occupancy:

Linear Distancy of Occupancy:

Comments:

TREND

Short-Term Trend: Decline of 10-30%

Comments: Estimated decline of 10-30%, with impacts from highway projects, however, other populations appear to be relatively stable, given other observed threats and new sites are still being found (Robinson 2016).

Long-Term Trend: Unknown

Comments:

THREATS

Scope: **Severity:** **Immediacy:**

Threat: Unknown

Comments: Threats to this species occur at low to moderate levels and include agricultural threats such as incompatible forestry practices and disturbance from cattle, impacts from transportation improvements to roads and highways, damage from recreational activities including foot traffic and ORV use, invasive plant species, residential and commercial development, and siltation and erosion resulting from severe weather.

OTHER FACTORS

Intrinsic Vulnerability:

Comments:

Environmental Specificity: Narrow. Specialist or community with key requirements common.

Comments:

Other Rank Considerations:

NEEDS

Research Needs:

Inventory Needs:

Protection Needs:

RANK

Rank: **S3**

Rank Reasons: This species has a restricted range and is endemic to the upper Piedmont of North Carolina.

Rank Review Date: 26-August-2016

Rank Change Date: 15-March-2004

VERSION

Version Author: M. Franklin (2004), Amoroso (2016), Robinson (2016)

Version Date: 09-May-2016

EXTENSIBLE TAB 1

State Exemplary Site Comments: (find table/field)

DWARF-FLOWERED HEARTLEAF ELICITATION QUESTIONS

Below is an overview of the questions we are asking for your expert feedback on. Each question is elaborated on in a new page below with information I've gleaned from the literature and reports. Please record your answers and insights on the following pages and return to me via email by Friday, January 26. Thank you! - Mike

1. How would you suggest delineating populations for this species?

2. What factors are important for characterizing resilience for this species? These include population factors (e.g. population size/density) and habitat factors (e.g. soil type, canopy cover).

3. How would you suggest delineating representative units for this species?

4. In thinking about future scenarios and viability of this species, what are the most pertinent risk factors to consider (e.g. development, invasive species, climate change)?

5. Based on the primary risk factors identified in question #4, what do you think an appropriate future time frame to project future conditions might be?

1. How would you suggest delineating populations for this species?

Under the 3 R's framework (resilience, redundancy, and representation), resilience is measured at the scale of a population, and resilient populations are then scaled up to assess redundancy and representation for the whole species. Because the population is the basic unit, it is important to define what constitutes a population. Recently, a "population" was defined based on NatureServe's separation distance criteria for a plant species of 1 km between separate populations/element occurrences. Pasted on the following page is their decision tree (full document here: http://www.natureserve.org/library/deliminting_plant_eos_Oct_2004.pdf). This seems to be the standard for this species and is used in NCNHP reports and the 5-year review. 1 km is the default separation distance, which they recommend altering if additional information or species characteristics warrant it. As of 2016, the combined databases of the NCNHP and SCNDNR contain 239 Element Occurrence Records (EORs) for *H. naniflora* (NCNHP2016, SCDNR 2016). These EORs depict roughly 113 locations which are sufficiently geographically distinct to be regarded as proxies for populations of the species

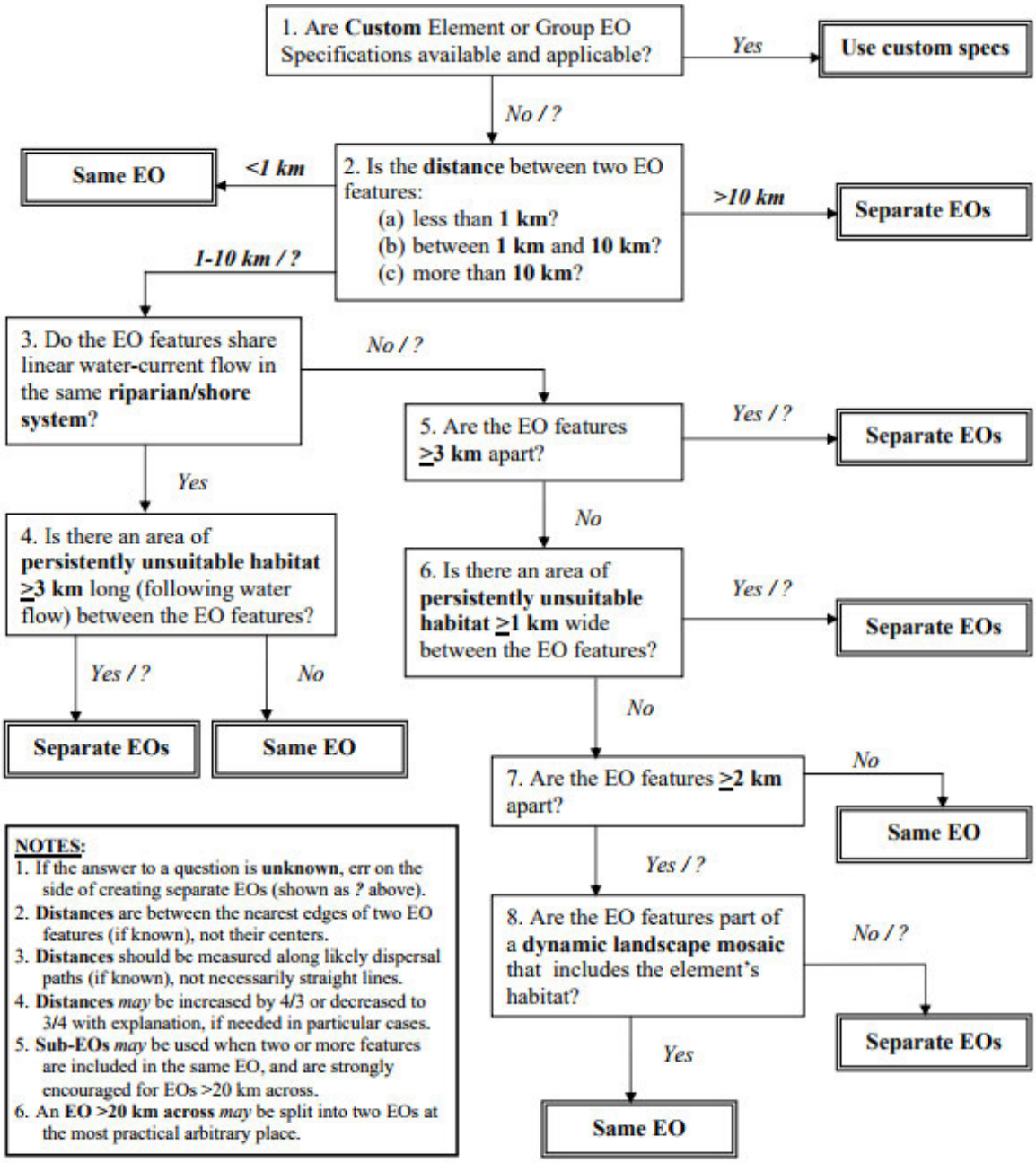
Based on the Natureserve guidelines or other information currently known, would you suggest using a criterion other than 1 km of separation between distinct populations? If so, what information is that based on (e.g. dispersal vectors or distances, pollinator behavior, genetic results)?

Answer:

As part of the NatureServe Network, NCNHP uses the NatureServe Guidelines. The term "population" refers to parent Element Occurrence records (Eos) and all associated subEOs within them, as delineated by the N.C. Natural Heritage Program. In general occurrences are considered separate when 2 km or more suitable habitat distance separates them, and when 1 km unsuitable habitat separates locations. In some circumstances, less than 1 km separates populations as when a major highway like I-74 occurs between locations or when occurrences are in separate watersheds. Comments on separation distances are recorded for each record as data are added or updated.

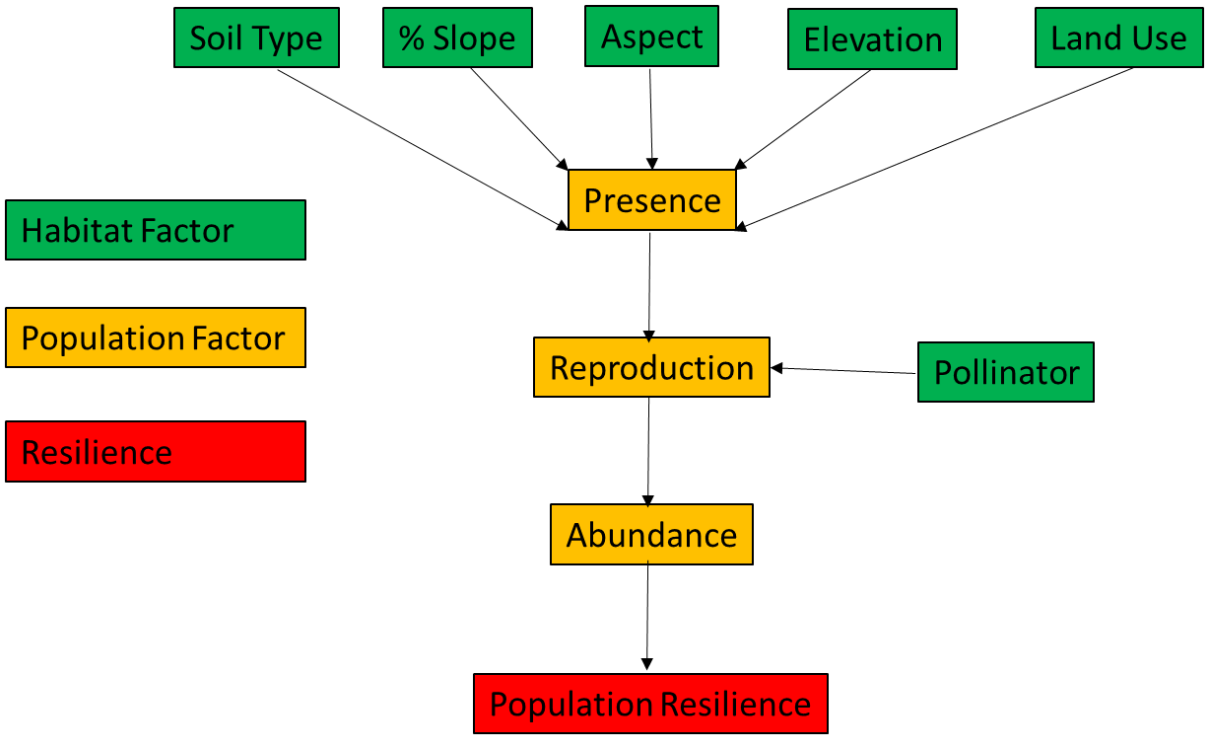
NCNHP procedures are outlined in more detail in the 2016 Dwarf-flowered Heartleaf (*Hexastylis naniflora*) Range-wide Status Report, Appendix B1 B1 (enclosed with email response).

Figure 1. Habitat-based Plant Element Occurrence Delimitation Guidance, 1 October 2004



2. What factors are important for characterizing resilience for this species? These include population factors (e.g. population size/density) and habitat factors (e.g. soil type, canopy cover).

These are the factors that we will use for each population to determine its resilience (whether it is a resilient vs. not resilient classification, or low-medium-high resilience, or some other kind of ranking). Based on the literature, there seem to be a few logical factors to include in the SSA (see influence diagram below). To the extent possible, some of these factors would be used in a model to quantify, to the extent possible, current and future condition of the species, and ultimately viability.



Potential habitat seems to be based on a few factors: soil type (occur in 4 soil types, mainly Pacolet sandy loam), % slope (8-10%), aspect (prefer north facing), elevation (199-415 m), and land use (i.e. deciduous forest).

The main population factor driving resilience of a given population seems to be population size. Given habitat is available and the species is present, reproduction must occur for a population to grow, and that is at least partly influenced by presence of pollinators, which seem to be mainly ants.

Other considerations: connectivity for cross-pollination/seed dispersal (distance from nearest neighbor population); Protected- either protected conservation land or some kind of landowner agreement.

Based on your knowledge of the species biology and needs. Feel free to select the most important ones from my preliminary list, please add any important things I missed, and by all means argue against anything on my list or otherwise that isn't an important contributor. While there are many factors that interact to influence populations, our goal is narrow it down to the most important factors for our assessment.

Answer:

The factors used for NCNHP rank specifications are similar to the ones mentioned for Resilience. I have included the rank specifications here:

Rank Specifications Justification

The unit of measurement for population size in this species is "clump" (rosette). EO size (as quantified by number of clumps or rosettes) is the primary rank factor. Condition of habitat (vegetation community and structure) and Landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. The species thrives most in undisturbed habitat. However, disturbed lands, that have been logged, grazed, mown, or converted to pasture, orchards, or tree plantations have been found to support remnant patches of *Hexastylis naniflora*. The extent to which this species can withstand disturbance is unknown. Populations in disturbed habitat are considered at risk, with relatively poor viability (C or D). Care should be taken when estimating population size, as population estimates have been found to vary widely from the number counted in population censuses. Specifications are based on largest known populations and expert opinion (including James Padgett, Carolyn Wells, Misty Buchanan (formerly Franklin), and Brenda Wichmann).

NCNHP procedures are outlined in more detail in the 2016 Dwarf-flowered Heartleaf (*Hexastylis naniflora*) Range-wide Status Report, Appendix B1 (enclosed with email response).

3. How would you suggest delineating representative units for this species?

> Representation refers to the species ability to adapt to changing environmental conditions, and can also be thought of as diversity. This can be genetic diversity and/or diversity in habitat types, life history traits, or other characteristics that could be indicative of underlying genetic diversity.
>
> For dwarf-flowered heartleaf, one could argue that here are no representative units, that there is only one "type". Support for this idea is the limited range of the species. Other ideas might stem from some of the genetic analyses for the species, indicating some type of latitudinal variation. The STRUCTURE analysis provides strong evidence that populations in the southern part of the range of *H. naniflora* are not subject to significant hybridization pressures, whereas populations in the southeast portion of the range appear to by hybridizing with *H. minor* and populations in the northern portion of the range appear to form a hybrid swarm with *H. heterophylla* and *H. minor*. Would this suggest representative units for the species based on a north-south-southeast split? Where might that split be mapped for purposes of the SSA? Watersheds? Basins?
>
> Given your expertise and experience, would you suggest delineating different representative units for the species? If so, how? Alternately, would you suggest there is only one "type" across the species range? If so, why?

Answer:

NCNHP has used hydrologic units to separate occurrences that are less than 2 km apart, but are not within the same stream drainage, however unsuitable habitat also exists in those cases. In informal review of mapped records, the close association of occurrences to hydrology leads to speculation about HENA's biological relationship to watersheds and river basins (see figure below of a section of the Upper Broad River hydrology layer over-lain with HENA features).

NCNHP does document results of genetic work on the species within EO records when the work indicates uncertainty about the identity of the plants at the location. The genetic work referred to in the question is preliminary and may not be appropriate to base a decision on until it is peer-reviewed.

There is uncertainty if there is one type, and there may be only one as Master's thesis research from Padgett (2004) and Niedenberger (2010) indicate that the pollen morphology of HENA is unique. Without comparison of pollen in conjunction with genetic analysis of those individuals, a north-south-southeast split may not be appropriate based on preliminary genetic work alone. For the purposes of the SSA, splitting at the watershed or basin level would be appropriate.

Padgett, J. E. 2004. Biogeographical, ecological, morphological, and micromorphological analyses of the species in the Hexastylis heterophylla complex. M.S. thesis. Appalachian State University, Boone, NC.

Niedenberger, B.A. 2010. Molecular phylogeny and comparative pollen morphology of the genus Hexastylis (Aristolochiaceae). M.S. thesis. Appalachian State University, **B**oone, NC.

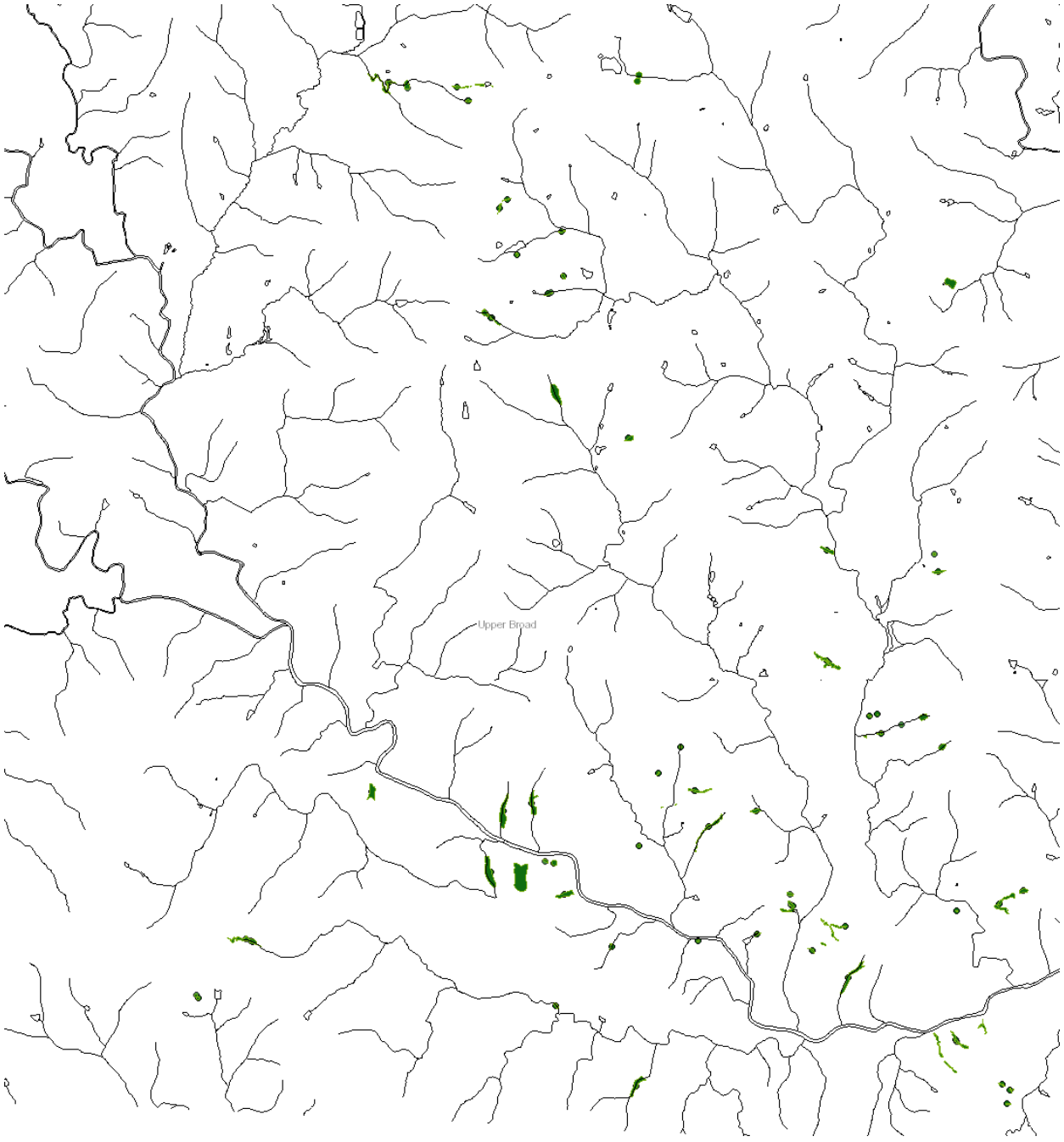


Figure of Hexastylis naniflora records along the Upper Broad River hydrological layer (NCNHP 2018-01)

4. In thinking about future scenarios and viability of this species, what are the most pertinent risk factors to consider (e.g. development, invasive species, climate change (temp, precip, etc))?

> For the SSA, we will define a set of possible future scenarios, and assess what future resilience, redundancy, and representation might look like under those scenarios. What are the most important factors to consider that could influence species viability now and into the future that we need to consider when defining future scenarios?

Answer:
Threats to this species occur at low to moderate levels and include agricultural threats such as incompatible forestry practices and disturbance from cattle, impacts from transportation improvements to roads and highways, damage from recreational activities including foot traffic and ORV use, invasive plant species, residential and commercial development, and siltation and erosion resulting from severe weather.

NCNHP procedures are outlined in more detail in the 2016 Dwarf-flowered Heartleaf (*Hexastylis naniflora*) Range-wide Status Report, Appendix B4 (enclosed with email response).

5. Based on the primary risk factors identified in question #4, what do you think an appropriate future time frame to project future conditions might be?

When we project populations into the future under different scenarios, we will need to be explicit about how far into the future we are projecting. Based on the risk factors identified above, *HENA* life history/generation times, uncertainty associated with the risk factors and *HENA* responses to them, over what time frame do you think we can reasonably predict future population conditions?

From: Marshall, Michael E
To: Amoroso, Jame
Cc: Mason, Suzanne; Reid, Rebekah N; Robinson, Laura
Subject: Re: [External] Elicitation Questions
Date: Friday, January 26, 2018 12:24:31 PM
Attachments: image001.png
Importance: High

Thank you so much Jame and crew!

Really appreciate you getting this to me. I am heavily leaning on that report as I write the SSA up....kudos on an exemplary report, in my opinion!

I plan on sending out the first section for review on Monday. When you get to review the various sections of the report, you can flag areas and suggest more detailed edits at that point....these questions are designed to make sure I'm on the right track, so to speak, and ensure the experts are tied into the process. You're answers are extremely useful as I try to tie this all together.

Have a great weekend!

Mike

On Fri, Jan 26, 2018 at 11:53 AM, Amoroso, Jame <jame.amoroso@ncdcr.gov> wrote:

> Hi Mike,
>
> Attached are NHP's responses to the elicitation questions. Some of my answers refer to a previous report which I have also included with my reply.
>
> Please let me know if you have any questions. NCNHP appreciates the opportunity to participate in this process.
>
> Thank you,
>
> Jame
>
> Jame Amoroso
>
> Conservation Information Specialist

121 W Jones St MSC 1651 Raleigh, NC 27699-1651

919 707 8621 *office*

Jame.Amoroso@ncdcr.gov

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From: Marshall, Michael [mailto:michael_marshall@fws.gov]
Sent: Friday, January 19, 2018 11:39 AM
To: Mason, Suzanne <suzanne.mason@ncdcr.gov>; Amoroso, Jame <jame.amoroso@ncdcr.gov>; Matt Estep <estepmc@appstate.edu>; Bassette, Tim <tpbassette@ncdot.gov>; Mark Endries <mark_endries@fws.gov>
Cc: Stephanie DeMay <sdemay@vt.edu>; Rebekah <rebekah_reid@fws.gov>; Drew Becker <drew_becker@fws.gov>
Subject: [External] Elicitation Questions

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Hello Technical Team!

First, I want to thank everyone for joining the kick-off call. I thought it was quite productive. On that call, I mentioned sending some elicitation questions out to the technical team in order to ensure species expert input into the drafting of the SSA for HENA. I have attached a questionnaire to this email. Please take a look and answer the questions to the best of your ability by next Friday (1/26/18).

I am currently drafting the Species Biology and Species Needs portions of the SSA, and should have that wrapped up by 1/29/18 for your review, though the elicitation questions will help in that drafting, so if you could get me your answers asap, I'd greatly appreciate it.

Thanks, and have a great weekend!

Mike

--

Mike Marshall

SSA Program Specialist

U.S. Fish and Wildlife Service Region 4

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Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week

Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week

Monday-Thursday --> In Office 7:30-4:30 CST

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--
Mike Marshall
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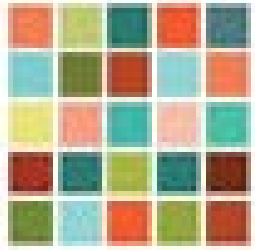
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NORTH CAROLINA
Natural Heritage Program
SCIENCE GUIDING CONSERVATION





NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From: Marshall, Michael E
To: Reid, Rebekah N; Endries, Mark
Cc: Stephanie DeMay; Becker, Drew N
Subject: Re: Elicitation Questions
Date: Friday, January 26, 2018 12:30:17 PM
Importance: High

FYI...Matt E. also sent his answers to me....everyone has responded! I'll upload those answers to google drive for folks to look over. My plan is to send out the first sections for review on Monday. I've revised based on Rebekah's comments and our Core Team discussion...I'll look to include the maps we discussed if possible in that Monday draft. Here are the 3 maps (2 we discussed) that I'd love to include if you could Mark....

The distribution map (shaded counties of occurrence, with some way of showing how many EOs are within those counties)

Updated map for the 3 species occurence/co-occurrence that did not include Iredell county

Based on Rebekah's comment...I totally agree that a map that shows soil layers and distribution....possibly soil layers within their range that are suitable for occupancy highlighted....basically show potential distribution of the species based on suitable soil types.

Thanks!

Mike

On Thu, Jan 18, 2018 at 9:26 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Good morning all,
>
> I've put together a set of elicitation questions for our technical team which will help guide important aspects of the SSA. I'd like to send these out by the end of the day today, so if you get a chance to look these over before I send out, I'd appreciate it. I'd give folks 1-week to answer and return to me.
>
> Thanks a bunch!
>
> Mike
>
> --
> Mike Marshall
> SSA Program Specialist
> U.S. Fish and Wildlife Service Region 4
> Cell: 512-461-6217
> Alternate email: mmarshall@ag.tamu.edu
>
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--
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Monday-Thursday --> In Office 7:30-4:30 CST

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From: Marshall, Michael E
To: Matt Estep
Cc: Reid, Rebekah N
Subject: Re: Elicitation Questions
Date: Wednesday, January 31, 2018 9:55:16 AM
Importance: High

Hi Matt,

I have a request for you....in your answers you mention a possible new species and provided a "heat" map of boundaries....you mention you could provide GPS coordinates....that would be fantastic! Not sure how we will incorporate all of this into the SSA, but would like to bring all of the data to the table. If you have shapefiles of any sort that would be fantastic.

Thanks!

Mike

On Thu, Jan 25, 2018 at 2:07 PM, Matt Estep <estepmc@appstate.edu> wrote:

> Hi Mike
>
> I am sorry my answers are so brief. I tried to restrict myself to my area of expertise and to not muddy the water when I know there are more experienced people in the group. I included a figure with a new structure analysis that was mapped to the landscape. I am happy to further discuss it. I can also provide some measures of genetic diversity for the two groups.
>
> Matt
>
> On Fri, Jan 19, 2018 at 11:39 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Hello Technical Team!
> >
> > First, I want to thank everyone for joining the kick-off call. I thought it was quite productive. On that call, I mentioned sending some elicitation questions out to the technical team in order to ensure species expert input into the drafting of the SSA for HENA. I have attached a questionnaire to this email. Please take a look and answer the questions to the best of your ability by next Friday (1/26/18).
> >
> > I am currently drafting the Species Biology and Species Needs portions of the SSA, and should have that wrapped up by 1/29/18 for your review, though the elicitation questions will help in that drafting, so if you could get me your answers asap, I'd greatly appreciate it.
> >
> > Thanks, and have a great weekend!
> >
> > Mike
> >
> > --

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Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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--
Dr. Matt C. Estep
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--
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Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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From: Reid, Rebekah N
To: Marshall, Michael E; Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Additional Info on EO Ranks from NHP
Date: Friday, February 2, 2018 11:51:47 AM
Attachments: HENA Range-wide Status Report EO RANK SPECS (August 2016).pdf
Importance: High

Mike,

I spoke with Jame about EO Ranks.

In an ideal world, the EO Rank would be updated with the last observance (so those two dates would be consistent). However, there may be a good reason for the discrepancy or it may have just been overlooked (Jame's comment was that they are only human). She asked me to pull out the discrepancies and she'd take a look. I'm working on that. Right now, it looks like maybe a third have that discrepancy.

There are EO Rank Specifications for HENA. This was in the back of the Range-wide Status Report and I missed it. I've pulled it out of the main document so we now all have easy access (see attached). Notice an A-ranked EO has >500 individuals...we talked about 1,000 as the magic number yesterday because of the previous reports but we may want to reconsider.

NCNHP did go through SCNHP's EO data and came up with 22 populations. Jame knows that a 2km buffer was used but she also thinks that habitat may have also been considered. That may account for the 18 vs 22 for SC - some of the larger aggregation of points may have had separations due to unsuitable habitat. Laura Robinson was the one to go through that data. If we want specifics, we will have to wait for her to return from maternity leave (sometime mid-February).

I've been playing phone tag with SCNHP but I did get this info in an email:

> The 100-or-1000 meter buffers are there to represent how exact (or inexact) we think a location might be, whereas the "30 meters" I mentioned yesterday is a minimum separation distance – i.e., in terms of distance, what should separate one occurrence record (of the same species) from the next? This is up to the biologist, but for plant observations we usually use a minimum distance of 30 meters.
>
> The confidence buffer and the separation distance are related in that, say, it wouldn't make sense to talk about a less-than-30-meter separation if you weren't confident that your GPS readings were accurate within 15 meters. But other separation considerations include – how stationary is the organism? at what scale is the biologist assessing population?
>
> I'm not sure how well any of this corresponds with NatureServe practices -- with no data manager on staff, we've been improvising!

I'm thinking we will just have to go with what we have for the SC data. NCNHP came up with 22 populations and I'm sure they have justification beyond just the 2km buffer so I'm

comfortable with that.

I'll be in touch with any updated rank dates for the table. Thanks and have a great weekend!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
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cell: 828-782-0090

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Appendix B3: NC Natural Heritage Program (NCNHP) Element Occurrence Rank Specifications for *Hexastylis naniflora*

"A" Rank Specifications (excellent viability)
An A-ranked population of *Hexastylis naniflora* should have more than 500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest.

"B" Rank Specifications (good viability)
A B-ranked population of *Hexastylis naniflora* should have 200-500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"C" Rank Specifications (fair viability)
A C-ranked population of *Hexastylis naniflora* should have 100-200 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"D" Rank Specifications (poor viability)
A D-ranked population of *Hexastylis naniflora* should have fewer than 100 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"E" Rank Specifications (extant)
An E-ranked population of *Hexastylis naniflora* is an occurrence that has recently been verified as still existing, but sufficient information for the factors used to estimate viability has not yet been obtained.

"H" Rank Specification (historical)
An H-ranked population of *Hexastylis naniflora* lacks recent field information verifying the continued existence of the occurrence. In the absence of known disturbance and with the habitat still extant, H is generally recommended for occurrences that have not been reconfirmed for approximately 30 or more years.

"F" Rank Specification (failed to find)
An F-ranked population of *Hexastylis naniflora* has not been found despite a search by an experienced observer at a time and under conditions appropriate for the Element at a location where it was previously reported, but the occurrence still might be confirmed to exist at that location with additional field survey efforts. For occurrences with vague locational information, the search must include areas of appropriate habitat within the range of locational uncertainty.

"X" Rank Specification (failed to find)
An X-ranked population of *Hexastylis naniflora* is considered destroyed based on adequate surveys by one or more experienced observers at times and under conditions appropriate for the species at the occurrence location, or other persuasive evidence indicates that the species no longer exists there or that the habitat has been destroyed to such an extent that it can no longer support the species.

“U” Rank Specification (failed to find)
A U-ranked population of *Hexastylis naniflora* cannot be assigned a rank due to lack of sufficient information on the occurrence or the species identification has not been confirmed.

Rank Specifications Justification
The unit of measurement for population size in this species is "clump" (rosette). EO size (as quantified by number of clumps or rosettes) is the primary rank factor. Condition of habitat (vegetation community and structure) and Landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. The species thrives most in undisturbed habitat. However, disturbed lands, that have been logged, grazed, mown, or converted to pasture, orchards, or tree plantations have been found to support remnant patches of *Hexastylis naniflora*. The extent to which this species can withstand disturbance is unknown. Populations in disturbed habitat are considered at risk, with relatively poor viability (C or D). Care should be taken when estimating population size, as population estimates have been found to vary widely from the number counted in population censuses. Specifications are based on largest known populations and expert opinion (including James Padgett, Carolyn Wells, Misty Buchanan (formerly Franklin), and Brenda Wichmann).

From: Amoroso, Jame
To: Reid, Rebekah N
Subject: RE: [External] EO Rank vs Last Obs Date
Date: Friday, February 2, 2018 12:46:26 PM
Attachments: image001.png
Importance: High

I will look these over and send you comments next week.

Have a great weekend!

Jame
Jame Amoroso
Conservation Information Specialist

121 W Jones St MSC 1651 Raleigh, NC 27699-1651
919 707 8621 *office*
Jame.Amoroso@ncdcr.gov

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From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, February 2, 2018 12:24 PM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Subject: [External] EO Rank vs Last Obs Date

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Jame,

Attached is spreadsheet that show HENA EO records with a discrepancy between EO rank date and last observed date. There are two scenarios represented in the table:

- EO rank date older than last observe date
- Last observe date older than EO rank date

Our questions are:

- In the case of EO rank date older than last observe date - Can we assume an EO rank date consistent with last observed date even if it is listed as older? Example EO14 - The last observed date was 2009 and the EO rank date is 2001. Can we assume 2009 for an updated

EO rank date?

- In the case of last observe date older than EO rank date - We can assume the EO rank date is accurate and maybe desk updated?

Thank you and have a great weekend!

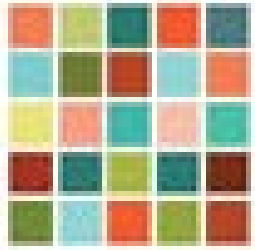
Rebekah Reid

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NORTH CAROLINA
Natural Heritage Program
SCIENCE GUIDING CONSERVATION





NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Friday, February 2, 2018 1:15:53 PM
Importance: High

Hi Rebekah,

Thanks for the info....very helpful. I'm using the spreadsheets with the data you provided to come up with a clean spreadsheet that shows only those populations for which the last observed/detection was no more than 10 years ago....this will change the narrative for number of populations, which is totally fine. Seems, as we discussed, the estimated number of populations came from data spread out over 20-30 years....we discussed not being too confident about the species actually being present, or especially abundance estimates that were older than 10 years...I will just be explicit about how the historical narrative on populations came from a wide time frame, but for the purposes of the SSA, we only focus on recent detections for the current condition of the species. As an example of what the estimates would be....for North Carolina, we go down from 90-something populations to 63....SC will be in the single digits. This is still a lot of populations, and the model will indicate there is a lot more available habitat that may or may not be occupied, but is suitable....will also point out that there are likely more populations at previous EO locations, but we did not want to include in the SSA analysis.

As for categorizing resilience based on population size....it seems the EO ranks consider threats, surrounding matrix, habitat and population numbers....because >1,000 plants is mentioned in many of the reports, I'd like to capture that....I'm thinking something like:

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Hope that all makes sense! Have a great weekend!

Mike

On Fri, Feb 2, 2018 at 11:51 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

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> In an ideal world, the EO Rank would be updated with the last observance (so those two

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Mike Marshall
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Alternate email: mmarshall@ag.tamu.edu

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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Monday, February 5, 2018 7:20:29 AM
Importance: High

Thanks, Mike. That all sounds good. I like the population size break down and will be interested to see what our experts think. Once you have the spreadsheet for current populations settled, send it my way. I will need to go through the spatial data and get it to Mark for the model. SC was supposed to send me data for their preserves but I haven't received it yet. I've reminded them again. My hope is that the preserve data is more current than what is in the SC EO data and we can add a few more populations to our list of current populations for SC. We'll see...

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To: Reid, Rebekah N
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Monday, February 5, 2018 9:33:20 AM
Attachments: HENA NCNHP EO Data Summary_mem_01312018.xlsx
HENA SCNHP EO Data Summary_mem.xlsx
Importance: High

Good morning!

I've attached 2 spreadsheets to this email (for North and South Carolina). Within these files, I have created a separate sheet labeled "Populations Only", in which I took only the populations that have been detected within the last 10 years.....those populations then got a resilience ranking based on population size based off of the rules:

>1,000 plants = very high

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Rebekah....a few notes: for NC pops...I wasn't sure if a population was made up of multiple EOs, if the population number was an additional EO...for example, if the population was labeled 100.000, and it was composed of 100.20, 100.21, and 100.22, is there just 3 EOs (20, 21, and 22), or are there 4 EOs (20, 21, 22, and 100)....I went with there only being 3 EOs, but all the data is preserved on the new sheet. Also, for SC...there are 2 populations at the end that I don't have EOs for....no problem, except for being able to spatially delineate these for the model, etc....

Have a look....hopefully I haven't made any big mistakes!

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Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
1	**23.000^**	A	Mill Creek Forest and Seep	1,733	>1000	2016	2015		Polk	N	NHP Comp Review and Mont Report.
2	**29.000^**	A	Island Creek Heath Bluff	50,541	>1000	2016	2016		Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
3	**31.000*^**	C?	NCDOT TIP: R-2824	1,062	>1000	2010	2001		Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
4	**32.000***	D	NCDOT TIP R-2824	457	100-500	2013	2011		Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
5	**44.000*^**	AB	Little Gunpowder Creek Rare Plant Site 1	617	500-1000	2015	2011		Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
6	**77.000***	CD	Little Gunpowder Creek Rare Plant Site 2	699	500-1000	2013	2007		Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
7	**87.000**	D	Catawba River: Lower Creek: Miller Creek	0	<100	2011	2011		Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
8	**93.000**	D	West Shelby Mesic Slope		100-500	2005	2005				Parent EO
	93.034	*D*	*West Shelby Mesic Slope*	*60*		*2005*	*2005*		*Clev*	*N*	
	93.035	*D*	*First Broad River: Brushy Creek*	*< 100*		*2016*	*2001*		*Clev*	*N*	*8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.*
9	**96.000**	A	Murrays Mill/Upper Balls Creek NA		>1000	2013	2010				Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
	*96.038^*	*CD*	*Catawba River: Deal Property*	*100 200*		*1996*	*1996*		*Cata*	*N*	
	*96.039^*	*D*	*Murrays Mill/Upper Balls Creek NA*	*< 50*		*2002*	*2002*		*Cata*	*?*	*Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)*
	96.184^*	*A*	*Murrays Mill/Upper Balls Creek NA*	*11,860*		*2013*	*2010*		*Cata*	*Y*	*NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)*
10	**98.000**	CD	Cat Square Heartleaf Forest		100-500	2012	2001				Parent EO
	98.002	*X*	*South Fork Catawba River, Indian Creek*	*0*		*1957*	*1980*		*Linc*	*N*	*Extirpated*
	98.003	*D*	*Cat Square Heartleaf Forest*	*160*		*2001*	*1995*		*Linc*	*N*	*presence noted in 2001, 160 plants counted in 1995*
	98.004	*CD*	*Cat Square Heartleaf Forest*	*200*		*2001*	*2001*		*Linc*	*N*	
	98.060	*D*	*NCDOT TIP: B-2119*	*20 50*		*2012*	*2001*		*Linc*	*N*	*EO is associated with NC DOT project B-2119*
11	**99.000**	A	Big Horse Creek Rare Plant Site	106,940	>1000	2015	2015				Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
	*99.009^*	*AB*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*Presence noted in 2012 - no count made, 500 estimate plants in 2005*
	*99.010^*	*A*	*Kudzu Farm Rare Plant Site*	*n/a*		*2014*	*2013*		*Ruth*	*N*	*33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.*
	*99.037^*	*C*	*Broad River: Hunter Road*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.*
	*99.052^*	*C*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2001*		*Ruth*	*N*	*200-300*
	*99.053^*	*D*	*Broad River: McKinney Bridge*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*<35*
	*99.055^*	*AB*	*Broad River: Richardson Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*included with EO 37. NHP Comp Review and Mont Report.*
	*99.061^*	*B*	*Broad River: UT at SR1115 and 1116*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*750-1000*
	*99.062^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*200-500. NHP Comp Review and Mont Report.*
	*99.063^*	*D*	*Broad River: Hayes Lake*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*20-25*
	*99.075^*	*A*	*Brice Rare Plant Site*	*n/a*		*2013*	*2013*		*Ruth*	*N*	*>7000. NHP Comp Review and Mont Report.*
	*99.076^*	*BC*	*Big Horse Rare Plant Site*	*n/a*		*2015*			*Ruth*	*Y*	*included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.*
	*99.079^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2012*	*2001*		*Ruth*	*N*	*200-300. NHP Comp Review and Mont Report.*
	*99.090^*	*D*	*Broad River: Richardson Creek*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*100-200*
	*99.121^*	*B*	*Broad River: Dills Creek*	*n/a*		*2004*	*2004*		*Ruth*	*N*	*300*
	*99.172^*	*D*	*Big Horse Rare Plant Site*	*n/a*		*2012*	*2012*		*Ruth*	*Y*	*50-100, Parris Heartleaf RHA voluntary agreement.*
	*99.181^*	*AB*	*Broad River: Dills Creek*	*n/a*		*2012*	*2001*		*Ruth*	*?*	*This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.*
	*99.182^*	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.249	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.*
	99.250	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.251	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.267	*CD*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*150-250*
	99.268	*D*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*25-30*
	99.319	*E*	*Broad River: Big Horse Creek*	*unk*		*2012*	*2012*		*Ruth*		*observed but no count made.*
12	**100.000**	A	Broad River/Sandy Run NA		>1000	2012	2012				Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
	*100.014^*	*C?*	*Broad River/Sandy Run NA*	*177*		*2009*	*2001*		*Clev*	*N*	*EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000*
	*100.049^*	*A*	*Broad River/Sandy Run NA*	*1,118*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.*
	*100.050^*	*A*	*Broad River/Sandy Run NA*	*4,801*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.*
	*100.051^*	*A*	*Broad River/Sandy Run NA*	*2,363*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.*
	*100.073^*	*A*	*Broad River/Sandy Run NA*	*13,595*		*2012*	*2012*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.*
	*100.074^*	*B*	*Broad River/Sandy Run NA*	*722*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.*
	*100.149^*	*A*	*Broad River/Sandy Run NA*	*3,280*		*2012*	*2009*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.233^*	*A*	*Broad River/Sandy Run NA*	*3,383*		*2012*	*2012*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)*
	100.235	*CD*	*Broad River: Trib N of Broad River and SE of Lake Houser*	*100 200*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.236^*	*C*	*Broad River/Sandy Run NA*	*150 300*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.237^*	*E*	*Broad River/Sandy Run NA*	*> 200*		*2012*	*2001*		*Clev*	*N*	*Outside Broad River Tract*
	*100.238^*	*A*	*Broad River/Sandy Run NA*	*1,865*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.239^*	*D*	*Broad River/Sandy Run NA*	*165*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.240^*	*F*	*Broad River/Sandy Run NA*	*20*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - "F"*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes	
	*100.241^*	*D*	*Broad River/Sandy Run NA*	*115*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)*	
	*100.246^*	*D*	*Broad River/Sandy Run NA*	*< 100*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*	
13	**125.000^**	A	New Hope Springhead Swamp		>1000	2016	2015		Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.	
14	**154.000^**	C	Facebook Site	2,576	>1000	2016	2015		Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.	
15	**157.000*^**	AB	First Broad River: Crooked Run Creek	330	100-500	2010	2005		Clev	N	DOT no longer monitors, too far from ROW.	
16	**158.000*^**	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	100-500	2016	2016		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.	
17	**176.000**	A	Davenport Road/Mountain View Rare Plant Site	6,750	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	*176.167^*	*A*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*Included with EO 107. NHP Comp Review and Mont Report.*	
	*176.168^*	*A*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*1113. NHP Comp Review and Mont Report.*	
	*176.169^*	*D*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2016*	*2016*		*Ruth*	*N*	*35. NHP Comp Review and Mont Report.*	
	*176.170^*	*C*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*191. NHP Comp Review and Mont Report.*	
18	**177.000**	A	Broad River: Floyds Creek	12,687	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	*177.016^*	*E*	*Broad River: Floyds Creek*	*n/a*		*2014*	*2012*		*Ruth*	*N*	*5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).*	
	*177.107^*	*B*	*Broad River: Floyds Creek*	*n/a*		*2008*	*2015*		*Ruth*	*N*	*241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remianing plants have no formal protection. (TB 9/21/2017)*	
	*177.122^*	*B?*	*Broad River: Floyds Creek*	*n/a*		*2008*	*2007*		*Ruth*	*N*	*123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).*	
	*177.163^*	*B*	*Broad River: Floyds Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*included with EO 107*	
	*177.164^*	*A*	*Broad River: Floyds Creek*	*n/a*		*2016*	*2005*		*Ruth*	*N*	*537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)*	
	*177.165^*	*C*	*Broad River: Floyds Creek*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*included with EO 107*	
	*177.166^*	*CD*	*Broad River: Floyds Creek*	*n/a*		*2005*			*Ruth*	*N*	*included with EO 107*	
19	**178.000**	A	Catawba River: Hoyle Crk-Micol Crk		>1000	2013	2016				Parent EO.	
	178.159^*	*A*	*Catawba River: Hoyle Crk-Micol Crk*	*2182*		*2013*	*2005*		*Burk*	*N*	*Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.*	
	*178.160^*	*A*	*Catawba River: Hoyle Crk-Micol Crk*	*733*		*2013*	*2008*		*Burk*	*N*	*loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)*	
	*178.161^*	*A*	*Catawba River: Hoyle Crk-Micol Crk*	*2,754*		*2009*			*Burk*	*N*	*In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.*	
	*178.254^*	*D?*	*Catawba River: Hoyle Crk-Micol Crk*	*> 168*		*2010*	*2010*		*Burk*	*Y*	*Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).*	
	*178.255^*	*D*	*Catawba River: Hoyle Crk-Micol Crk*	*unk*		*2006*	*2006*		*Burk*	*Y*	*286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.*	
	*178.256^*	*C?*	*Catawba River: Hoyle Crk-Micol Crk*	*> 376*		*2010*	*2010*		*Burk*	*Y*	*Permanent conservation easement with Burke Cty and Public School System. "Considerable" number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).*	
	*178.280^*	*C*	*Catawba River: Hoyle Crk*	*126*		*2009*	*2009*		*Burk*	*Y*	*Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)*	
	*178.281^*	*E*	*Catawba River: Hoyle Crk-Micol Crk*	*unk*		*2009*	*2009*		*Burk*	*N*	*presence noted, no count made - outside of NCDOT ROW*	
	*178.282^*	*E*	*Catawba River: Hoyle Crk-Micol Crk*	*unk*		*2009*	*2009*		*Burk*	*N*	*included with 281? - presence noted, no count made - outside of NCDOT ROW*	
	178.283	*E*	*Catawba River: McGalliard Creek*	*unk*		*2009*	*2009*		*Burk*	*N*	*included with 281? - presence noted, no count made - outside of NCDOT ROW*	
	178.284	*E*	*Catawba River: McGalliard Creek*	*unk*		*2009*	*2009*		*Burk*	*N*	*included with 281? - presence noted, no count made - outside of NCDOT ROW*	
	178.310	*A*	*Megalliard Creek Slopes; Lake Rhodhiss*	*1,500 2,000*		*2016*	*2016*		*Burk*	*Y*	*Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.*	*NHP*
20	**179.000**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		>1000	2012	2005				Parent EO	
***	*179.030**	*CD*	*NCDOT TIP R-2824*	*3,291*		*2013*	*2001*		*Cata*	*N*	*DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants totol in the EO. Last report (2013)documented 4,719 plants.*	
	*179.162**	*D*	*NCDOT TIP R-2825*	*21*		*2012*	*2005*		*Cata*	*N*	*No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.*	
21	**206.000**	D	Buffalo Creek: Ravine	90	<100	2007	2007		Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
22	**208.000^**	A	Buffalo Creek: Potts Creek	50 100	<100	2012	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
23	**214.000**	A	Buffalo Creek: Tributaries N and S of SR 2047		>1000	2012	2000				Parent EO	
	*214.201^*	*D*	*Buffalo Creek: Tributary S*	*64*		*2000*	*2000*		*Clev*	*?*	*14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT*	
	*214.202^*	*A*	*Buffalo Creek: Ravine N*	*1,627*		*2000*	*2000*		*Clev*	*?*	*14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.*	
	*214.203^*	*B*	*Buffalo Creek: 3rd Tributary S*	*96*		*2007*	*2007*		*Clev*	*?*	*110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?*	
	*214.204^*	*A?*	*Buffalo Creek: S of SR 2128*	*?*		*2000*	*2000*		*Clev*	*?*	*3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT*	
	*214.205^*	*D*	*Buffalo Creek: N of SR 2128*	*171*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.*	
	*214.209^*	*BC*	*Buffalo Creek: Tributary E of County Fairgrounds*	*196*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.*	
	*214.212^*	*D*	*Buffalo Creek: Slope along Trib just N of SR 2047*	*97*		*2000*	*2000*		*Clev*	*N*	*In DOT study area for R-2707. No formal protection.*	
	*214.213^*	*CD*	*Buffalo Creek: Ravine just S of SR 2047*	*50 100*		*2012*	*2012*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT*	
24	**216.000**	A	Buffalo Creek: Kings Mountain Res		>1000	2016	2000				Parent EO	
	216.028	*B*	*Buffalo Creek Rare Plant Site*	*250*		*2016*	*2016*		*Clev*	*Y*	*This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)*	
	216.196	*D*	*Buffalo Creek: Friendship Chapel*	*56*		*2006*	*2006*		*Clev*	*N*	*In Dot study area. No formal protection.*	
	*216.197^*	*A*	*Buffalo Creek: Kings Mountain Res*	*2,067*		*2000*	*2000*		*Clev*	*?*	*NC DOT plans "NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement*	
	*216.198^*	*B*	*Buffalo Creek: Kings Mountain Res*	*450*		*2007*	*2007*		*Clev*	*N*	*In Dot study area. No formal protection.*	
	*216.199^*	*B*	*Buffalo Creek: Kings Mountain Res*	*432*		*2007*	*2007*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.*	
	*216.200^*	*D*	*Buffalo Creek: Kings Mountain Res*	*55*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT*	
25	**217.000**	B	Broad River: Brushy Creek		>1000	2016	2016				Parent EO	
	217.190	*F*	*Broad River: Brushy Creek*	*0*		*2000*	*2006*		*Clev*	*N*	*No plants found.*	
	*217.191**	*D*	*Broad River: Brushy Creek*	*264*		*2014*	*2000*		*Clev*	*Y*	*DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.*	
	217.192	*C*	*Broad River: Brushy Creek*	*494*		*2016*	*2016*		*Clev*	*Y*	*NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).*	
	217.193	*C*	*Broad River: Brushy Creek*	*271*		*2000*	*2000*		*Clev*	*?*	*NC DOT proposes to protect Site 9 through a conservation easement.*	
	217.305	*CD*	*Washburn Switch Business Park*	*70*		*2015*	*2015*		*Clev*	*N*	*Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.*	
26	**227.000^**	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	>1000	2014	2014		Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
27	**232.000**	A?	Buffalo Creek Rare Plant Site		500-1000	2012	2005				Parent EO.
	232.046	*A*	*Buffalo Creek Rare Plant Site*	*500*		*2005*	*2005*		*Clev*	*N*	*Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
	232.231	*D*	*Buffalo Creek Rare Plant Site*	*20*		*2012*	*2012*		*Clev*	*N*	*Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
28	**243.000**	AB	Jacob Fork West Corridor		>1000	2012	2007				Parent EO
	*243.012^*	*A*	*Jacob Fork West Corridor*	*> 1,000*		*1995*	*1995*		*Cata*	*?*	*Catawba County Wildlife Club RHA voluntary agreement.*
	*243.242^*	*D*	*Jacob Fork West Corridor*	*4*		*2005*	*2005*		*Cata*	*N*	
	*243.269^*	*B*	*Jacob Fork West Corridor*	*> 200*		*2007*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).*
	*243.270^*	*C?*	*Jacob Fork West Corridor*	*75 100*		*2012*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.*
29	**245.000**	AB	Floyds Creek Tributray Rare Plant Site		>1000	2010	2005				Parent EO
	245.091	*D*	*Broad River: Floyds Creek*	*30*		*2012*	*2003*		*Ruth*	*N*	
	245.113	*C*	*Floyds Creek Tributray Rare Plant Site*	*1,113*		*2010*	*2007*		*Ruth*	*N*	*7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?*
	245.175	*C*	*Floyds Creek Tributray Rare Plant Site*	*unk*		*2010*	*2007*		*Ruth*	*N*	*included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.*
30	**247.000**	A	New Bethel Rare Plant Site		>1000	2015	2015				Parent EO, NC DOT Mitigation Site
	247.013	*D*	*Sandy Mush Outcrop*	*< 100*		*2005*	*2005*		*Ruth*	*N*	
	247.056	*D*	*Broad River: Floyds Creek*	*< 150*		*2002*	*2001*		*Ruth*	*N*	
	*247.080^*	*D*	*Broad River: Floyds Creek*	*50*		*2012*	*2003*		*Ruth*	*N*	*No plant count made in 2012. 50 plants counted in 2003.*
*	*247.106*^*	*A*	*New Bethel Rare Plant Site*	*4,547*		*2015*	*2008*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).*
	*247.114^*	*D*	*Broad River Floyds Creek*	*0*		*2010*	*2003*		*Ruth*	*N*	*14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017*
	*247.115^*	*C*	*Broad River Floyds Creek*	*133*		*2005*	*2007*		*Ruth*	*N*	*Combine with EO 114*
	*247.173^*	*D*	*Broad River Floyds Creek*	*102*		*2005*	*2003*		*Ruth*	*N*	*inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??*
	*247.174^*	*D*	*Broad River Floyds Creek*	*84*		*2010*	*2003*		*Ruth*	*N*	*35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area*
*	*247.286*^*	*B*	*New Bethel Rare Plant Site*	*326*		*2015*	*2015*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.*
31	**248.000**	C	Jonas Road Rare Plant Site		100-500	2005	2005				Parent EO
	248.040	*C*	*Jonas Road Rare Plant Site*	*150 200*		*2005*	*2005*		*Ruth*	*N*	
	248.054	*D*	*Broad River: McKinney Creek*	*20 30*		*2014*	*2001*		*Ruth*	*N*	*20-30 plants noted for last count in 2005*
32	**252.000**	B	South Fork Catawba River, Henry Fork		100-500	2007	2005				Parent EO
	252.019	*D?*	*NCDOT TIP: R-0085*	*unk*		*2007*	*2007*		*Cata*	*?*	*EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.*
	252.020	*B*	*NCDOT TIP: R-0086*	*296*		*2007*	*2005*		*Cata*	*?*	*May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.*
33	**271.000**	C?	Pott Creek	5 6	<100	2012	2012		Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
34	**272.000**	BC	No Business Creek, Boyd Tract	75 150	100-500	2007	2007		Clev	N	
35	**274.000**	A?	Broad River/Sandy Run NA	100	100-500	2012	2008		Clev	Y	Broad River Greenway, Town of Boiling Springs
36	**275.000***	C	Buffalo Shoals Creek	257	100-500	2014	2014		Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
37	**276.000^**	A	Cliffside Steam Station	39,535	>1000	2016	2016		Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
38	**277.000**	D	Hickory: Martin Marietta Quarry	0	extripated	2011	2011		Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
39	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	?	<100	2009	2009		Linc	N	small
40	**287.000**	AB	Fox Knoll Farm	?	???	2016	2016		Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
41	**291.000**	C	Gunpowder Creek	82	???	2012	2010		Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
42	**292.000**	D	Forest City: Adj to Isothermal CC	150	100-500	2010	2010		Ruth	N	Owner, Ruthford County.
43	**293.000**	E	Killian Crossroads	unk	???	2010	2010		Cata	N	No plant count in EO data.
44	**295.000**	B	Hickory Area		100-500	2016				Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
	295.021	*A*	*Hickory Area, Catawba River: Geitner Park*	*> 300*		*2005*	*2005*		*Burk*	*?*	*Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?*
	295.294	*C*	*Hickory Area: Bud Geitner Park Transplant Site*	*153*		*2016*	*2014*		*Burk*	*?*	*Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.*
	295.313	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cata*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.*
	295.314	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cald*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).*
45	**296.000**	CD	UT of Kings Mountain Res	100	100-500	2012	2012		Gast	N	
46	**297.000**	CD	Beaverdam Crk at First Broad River	unk	???	2011	2011		Clev	N	No plant count in EO data.
47	**298.000**	C	Brushy Creek Headwaters	250 300	100-500	2014	2014		Clev	N	
48	**299.000**	D	Lincoln County, SR-1314	27	<100	2014	2014		Linc	N	In DOT study. No formal protection.
49	**300.000**	D	Levan Family Farm	50	<100	2013	2013		Ired	N	
50	**302.000**	A	Rhyne Conservation Preserve		>1000	2016	2014				Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
	302.047	*D*	*NCDOT Project R-617C, South Fork Catawba*	*5*		*2005*	*2005*		*Linc*	*N*	*In DOT ROW, no formal protection.*
	302.262	*A*	*Rhyne Conservation Preserve*	*19,873*		*2016*	*2016*		*Linc*	*Y*	*Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.*
51	**303.000**	AB	Smith Cliff/Henry Fork River	?	100-500	2015	2015		Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
52	**304.000**	B?	Simms Hill/Little River Uplands	200 250	100-500	2015	2015		Burk	Y	Conservation site managed by the Foothills Conservancy of NC
53	**306.000**	D	Fanjoy Road Site	75	<100	2015	2015		Ired	N	
54	**308.000**	C	Glade Creek, Alex County	2,194	>1000	2017	2017		Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
55	**309.000**	D?	South Mountains Pleasant Grove Uplands	?	<100	2016	2016		Burk	N	few
56	**311.000**	A	Collinsville (Hughes) Creek Slopes	200 750	100-500	2016	2016		Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
57	**312.000**	A	Richardson Creek trib above Toms Lake	?	>1000	2016	2016		Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
58	**316.000**	C	Northern Catawba County		???	2017	2017			?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
59	316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	500-1000	2006	2006		Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
	316.315	*D*	*NC-127/Cloninger Mill Road*	*60*		*2017*	*2017*		*Cata*	*?*	*Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A*
60	**317.000**	D	NCDOT TIP R-3603A	30	<100	2017	2017		Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
61	**318.000**	C	Burke County - Drowning Creek UT	356	100-500	2017	2017		Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
62	**320.000**	E	Hickory Creek - UT (Shelby High School)	15	<100	2016	2016		Clev		
63	**321.000**	B	Gunpowder Creek: South of Hudson	2475	>1000	2012	2012		Cald		NCDOT
	Add		*Rock Barn Solar Farm*	*821*					*Cata*	*Y*	*Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded.*	*NHP*

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed
1	**23.000^**	**23.000**	A	Mill Creek Forest and Seep	>1000	very high	Polk	2016
2	**29.000^**	**29.000**	A	Island Creek Heath Bluff	>1000	very high	Burk	2016
3	**31.000*^**	**31.000**	C?	NCDOT TIP: R-2824	>1000	very high	Cata	2010
4	**32.000***	**32.000**	D	NCDOT TIP R-2824	100-500		Cata	2013
5	**44.000*^**	**44.000**	AB	Little Gunpowder Creek Rare Plant Site 1	500-1000	high	Cald	2015
6	**77.000***	**77.000**	CD	Little Gunpowder Creek Rare Plant Site 2	500-1000	high	Cald	2013
7	**87.000**	**87.000**	D	Catawba River: Lower Creek: Miller Creek	<100	low	Cald	2011
8	**93.000**	**34; 35**	D	West Shelby Mesic Slope	100-500	moderate		2016
9	**96.000**	**38; 39; 184**	A	Murrays Mill/Upper Balls Creek NA	>1000	very high		2013
10	**98.000**	**2; 3; 4; 60**	CD	Cat Square Heartleaf Forest	100-500	moderate		2012
11	**99.000**	**9; 10; 37; 52; 53; 55; 61; 62; 63; 75; 76; 79; 90; 121; 172; 181; 182; 249; 250; 251; 267; 268; 319**	A	Big Horse Creek Rare Plant Site	>1000	very high		2015
12	**100.000**	**14; 49; 50; 51; 73; 74; 149; 233; 235; 236; 237; 238; 239; 240; 241; 246**	A	Broad River/Sandy Run NA	>1000	very high		2012
13	**125.000^**	**125.000**	A	New Hope Springhead Swamp	>1000	very high	Polk	2016
14	**154.000^**	**157; 158**	C	Facebook Site	>1000	very high	Ruth	2016
17	**176.000**	**167; 168; 169; 170**	A	Davenport Road/Mountain View Rare Plant Site	>1000	very high		2016
18	**177.000**	**16; 107; 122; 163; 164; 165; 166**	A	Broad River: Floyds Creek	>1000	very high		2016
19	**178.000**	**159; 160; 161; 254; 255; 256; 280; 281; 282; 283; 284; 310**	A	Catawba River: Hoyle Crk-Micol Crk	>1000	very high		2013
20	**179.000**	**30; 162**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	>1000	very high		2012
21	**206.000**	**206.000**	D	Buffalo Creek: Ravine	<100	low	Clev	2007
22	**208.000^**	**208.000**	A	Buffalo Creek: Potts Creek	<100	low	Clev	2012

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed
23	**214.000**	**201; 202; 203; 204; 205; 209; 212; 213**	A	Buffalo Creek: Tributaries N and S of SR 2047	>1000	very high		2012
24	**216.000**	**28; 196; 197; 198; 199; 200**	A	Buffalo Creek: Kings Mountain Res	>1000	very high		2016
25	**217.000**	**190; 191; 192; 193; 305**	B	Broad River: Brushy Creek	>1000	very high		2016
26	**227.000^**	**227.000**	A	Peaked Top Rare Plant Site/Foothills Landfill	>1000	very high	Cald	2014
27	**232.000**	**46; 231**	A?	Buffalo Creek Rare Plant Site	500-1000	high		2012
28	**243.000**	**12; 242; 269; 270**	AB	Jacob Fork West Corridor	>1000	very high		2012
29	**245.000**	**91; 113; 175**	AB	Floyds Creek Tributray Rare Plant Site	>1000	very high		2010
30	**247.000**	**13; 56; 80; 106; 114; 115; 173; 174; 286**	A	New Bethel Rare Plant Site	>1000	very high		2015
31	**248.000**	**40; 54**	C	Jonas Road Rare Plant Site	100-500	moderate		2005
32	**252.000**	**19; 20**	B	South Fork Catawba River, Henry Fork	100-500	moderate		2007
33	**271.000**	**271.000**	C?	Pott Creek	<100	low	Cata	2012
34	**272.000**	**272.000**	BC	No Business Creek, Boyd Tract	100-500	moderate	Clev	2007
35	**274.000**	**274.000**	A?	Broad River/Sandy Run NA	100-500	moderate	Clev	2012
36	**275.000***	**275.000**	C	Buffalo Shoals Creek	100-500	moderate	Ired	2014
37	**276.000^**	**276.000**	A	Cliffside Steam Station	>1000	very high	Clev/Ruth	2016
38	**277.000**	**277.000**	D	Hickory: Martin Marietta Quarry	extripated	extripated	Cata	2011
39	**279.000**	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	<100	low	Linc	2009
40	**287.000**	**287.000**	AB	Fox Knoll Farm	???	unknown	Polk	2016
41	**291.000**	**291.000**	C	Gunpowder Creek	???	unknown	Cald	2012
42	**292.000**	**292.000**	D	Forest City: Adj to Isothermal CC	100-500	moderate	Ruth	2010
43	**293.000**	**293.000**	E	Killian Crossroads	???	unknown	Cata	2010
44	**295.000**	**21; 294; 313; 314**	B	Hickory Area	100-500	moderate		2016
45	**296.000**	**296.000**	CD	UT of Kings Mountain Res	100-500	moderate	Gast	2012
46	**297.000**	**297.000**	CD	Beaverdam Crk at First Broad River	???		Clev	2011
47	**298.000**	**298.000**	C	Brushy Creek Headwaters	100-500	moderate	Clev	2014
48	**299.000**	**299.000**	D	Lincoln County, SR-1314	<100	low	Linc	2014
49	**300.000**	**300.000**	D	Levan Family Farm	<100	low	Ired	2013
50	**302.000**	**47; 262**	A	Rhyne Conservation Preserve	>1000	very high		2016
51	**303.000**	**303.000**	AB	Smith Cliff/Henry Fork River	100-500	moderate	Burk	2015
52	**304.000**	**304.000**	B?	Simms Hill/Little River Uplands	100-500	moderate	Burk	2015
53	**306.000**	**306.000**	D	Fanjoy Road Site	<100	low	Ired	2015
54	**308.000**	**308.000**	C	Glade Creek, Alex County	>1000	very high	Alex	2017
55	**309.000**	**309.000**	D?	South Mountains Pleasant Grove Uplands	<100	low	Burk	2016
56	**311.000**	**311.000**	A	Collinsville (Hughes) Creek Slopes	100-500	moderate	Polk	2016
57	**312.000**	**312.000**	A	Richardson Creek trib above Toms Lake	>1000	very high	Ruth	2016

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed
58	**316.000**	**273; 315**	C	Northern Catawba County	???	unknown		2017
59	**317.000**	**317.000**	D	NCDOT TIP R-3603A	<100	low	Alex	2017
60	**318.000**	**318.000**	C	Burke County - Drowning Creek UT	100-500	moderate	Burk	2017
61	**320.000**	**320.000**	E	Hickory Creek - UT (Shelby High School)	<100	low	Clev	2016
62	**321.000**	**321.000**	B	Gunpowder Creek: South of Hudson	>1000	very high	Cald	2012

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
1	3	3852	H	Beaverdam Creek/3 mi east of Travelers Rest				1964	2009	GREE			
1	5	7689	CD	Sagittaria Hydrology Site		150	200	1991	2008	GREE			Doug Rayner (Wofford College) - emailed 12/12/17
1	6	1160	CD	Junction of SSR173 and SSR 262		75	100	1991	2008	GREE			
1	8	4875	BD	UT Beaverdam Creek/S-903		150		1991	2008	GREE			
1	15	1713	AC	DNR Bunched Arrowhead Preserve		1		1991	2010	GREE	Y	DNR Bunched Arrowhead Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
1	52	730	AC	DNR Belvue Springs Heritage Preserve		?		1999	2008	GREE		"numerous clumps", DNR Belvue Springs HP. Is this the same as the Bunched Arrowhead Preserve?	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
2	10	7931	H?	UT Enoree River				1985	2010	GREE			
2	51	6287	BC	DNR Clear Creek Heritage Preserve		1		1999	2008	GREE	Y	DNR Clear Creek Heritage Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	22	1649	BD	UT Tyger River/south of S-75		50	100	1991	2008	SPAR		same as 9058	
3	23	9058	BD	UT Tyger River/south of S-75						SPAR		same as 1649 (duplicate plant count)	
4	2	7399	BD	1.5 mi south of Gowensville/SC14		150		1991	2008	GREE			
4	4	3101	CD	Fairview Farms		75		1991	2008	SPAR			
4	24	6179	CD	UT Motlow Creek		50	100	1991	2008	SPAR			
4	32	5677	BD	Page Creek at Landrum HS		155		1991	2008	SPAR			
4	33	4879	BD	NW of Junction SC11 and SC14		168		1991	2008	GREE			
4	36	1993	BD	Clear Branch Creek		303		1991	2008	SPAR			
4	38	3367	BD	UT Spivey Creek	+	1000		1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
4	39	8503	CD	1 mi SW of US176 and S-209 in Ingleside		66		1991	2008	SPAR			
4	40	8504	BD	UT Clear Branch Creek		221		1991	2008	SPAR			
4	41	1460	CD	SC 14 and High Farm Road		50	100	1991	2008	SPAR			
4	42	8856	BD	1/4 mi E of SC14 and South Pacolet River		189		1991	2008	GREE/SPAR			
4	49	1450	AB	UT Page Creek/Campbell Ave		750	800	2001	2008	SPAR	?	2001: "new Spartanburg Water Systems preserve"	Spartanburg Water System (who?)
4	50	1449	BD	Page Creek Sewer Line		400	550	2001	2008	SPAR	?	2001: "an easment is being sought"	Spartanburg Water System (who?)
4	54	2719	BD	Headwater UT Wolfe Creek		400		2001	2008	SPAR	?	"On City of Landrum Property"	
4	59	13002	BD	Beaver Dam Creek/MetCalf		250	500	2005	2011	SPAR			
5	30	6009	BD	Greene Creek		100		1994	2008	SPAR			
6	25	878	CD	Lake William Bowen		10	20	1991	2008	SPAR			
7	37	6749	CD	Bear Creek		56		1991	2008	SPAR			
8	35	108	BD	Alverson Grove Church		74		1991	2008	SPAR			
9	34	7788	BD	Arrowood Branch		13		1991	2008	SPAR			
10	31	1730	H?	Blalock Res Site P				1984	2009	SPAR		NCNHP includes EO 7 and 31 as Blalock sites, 5-YR Review includes EO 7 and 29. 2km rule groups EO 7 and 29 together with EO 31 separate (>2km) but close by.	Spartanburg Water System (who?)
11	7	7013	BD	Taylor Blalock Res		3505		2016	2008	SPAR		James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
11	29	6010	H?	Blalock Res Site C				1984	2009	SPAR			Spartanburg Water System (who?)
12	20	3552	BD	Camp Mary Elizabeth		150		1991	2008	SPAR	?	Girl Scouts of America	Fred Parrish
12	21	1984	BD	Beaverdam Creek/Claggett Raintree		700		1991	2008	SPAR	?	SC Nature Conservancy	Kristen Austin (TNC SC) emailed 12/12/17, or Fred Parrish
12	55	2486	CD	UT North Tyger River/Woodridge		50		2001	2008	SPAR			
13	9	7930	CD	Chinquapin Creek		?		1991	2008	SPAR		"two small colonies"	Fred Parrish
13	13	6456	BD	UT Cleveland Park Lake		50		1991	2008	SPAR	?	City of Spartanburg - Cleveland Park	Fred Parrish
13	19	3551	BC	USC-Upstate		25	50	1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
13	46	2369	CD	Shoally Creek		25		1998	2008	SPAR			
13	53	8981	BC	USC-Upstate		250	300	2000	2008	SPAR		Is this a part of other USC population?	Doug Rayner (Wofford College) - emailed 12/12/17
13	56	6523	BD	Lawsons Fork Creek on US221		200	250	2001	2008	SPAR			
14	11	6097	AB	DNR Peters Creek Heritage Preserve		3306		2016	2008	SPAR	Y	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	14	2791	AB	DNR Peters Creek Heritage Preserve		5000		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve, Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	26	5183	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	27	4476	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	28	8667	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	47	6953	U	Cannon Campground Road and Kelly Road				1998	2008	SPAR			
14	48	2769	U	Kelly Road				1998	2008	SPAR			
14	57	4312	BD	Lincoln Memorial Cem/Cannon Campground Rd		450	600	1997	2012	SPAR			
15	16	916	BC	Cowpens NBF - Site 1		2823		2016	2008	CHER		US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
15	17	5173	BC	Cowpens NBF - Site 3	+	130		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
15	18	6825	BC	Cowpens NBF - Site 2		50		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
16	1	235	BD	Cherokee Creek/SC 11		200		1991	2008	CHER			
16	44	3124	H?	SW side of SC 11 - 5.45 mi NW of I-85				1984	2009	CHER			
16	45	5554	U	Lenzer Circle				1989	2008	CHER			
16	60	13003	BD	Cherokee Creek/Bonner and Robin School Roads		1500		2004	2011	CHER			
17	43	7286	CD	McKee Drive		20		1991	2008	CHER			
18	12	1322	H?	Horse Creek				1986	2012	CHER			
				Boulder Creek Subdivision - Jordan Road		15	20	2006		GREE	Y	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
				Gateway Elementary School						GREE		"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

Populations	EO Number	EO Rank	Site Name	Total Estimated Plants	Resilience Category	Last Observed	County	Notes	Who might know/contact
1	7; 29	BD	Taylor Blalock Res	>1000	Very High	2016	SPAR	James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
2	11; 14; 26; 27; 28; 47; 48; 57	AB	DNR Peters Creek Heritage Preserve	>1000	Very High	2016	SPAR	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	16; 17; 18	BC	Cowpens NBF - Site 1	>1000	Very High	2016	CHER	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP
4	?	?	Boulder Creek Subdivision - Jordan Road	<100	Low	2017	GREE	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
5	?	?	Gateway Elementary School	<100	Low	2017	GREE	"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Monday, February 5, 2018 11:12:13 AM
Importance: High

Thanks, Mike.

I'll take a look. Sounds like you got it right with the EOs. In your example, the population as a whole (represented by 100) includes three sub-pops (20, 21, and 22). 100 is the placeholder but does not (should not) have population size data on its' own.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Mon, Feb 5, 2018 at 9:33 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

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Thanks!

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Hope that all makes sense! Have a great weekend!

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Rebekah Reid

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From: Reid, Rebekah N
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Tuesday, February 6, 2018 11:43:27 AM
Importance: High

Hi Frank,

I wanted to follow-up on two sites you mentioned - Gateway Elementary and Boulder Creek. Can you tell me, when was the last time you saw plants at these locations? And, can you send me coordinates or drop a pin on Google maps for the location of these sites? I'm pretty sure I found Gateway on the map but I can't find Boulder Creek.

Thank you for all your help.

Rebekah Reid

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On Thu, Nov 30, 2017 at 11:03 AM, Frank Holleman <fholleman@selcnc.org> wrote:

> Rebekah,
>
> I'm the President of Naturaland Trust, the land trust in Greenville that works to protect special places in the SC Piedmont and SC's Blue Ridge Mountains. We are interested in Hexastylis naniflora and seek to protect properties that include it. I'm also a volunteer with the SC Native Plant Society. I'm copying Jeff Beacham, the former state president, because, as set out below, he and I have worked on a couple of projects involving it, and also our current state president, Lisa Lord. I'm also an attorney with the Southern Environmental Law Center, and sometimes the various projects overlap.
>
> Here are some projects we've been involved in:
>
> 1. Peters Creek. Naturaland Trust acquired a parcel (about one acre, as I recall) that bisected the trail and the creek in the Peters Creek Heritage Trust Preserve, to protect the Preserve. We have not thoroughly checked that property, but we aren't aware of any HN on it.

2. We are currently working with SC DNR to try to acquire property next to the Blackwell Heritage Trust Preserve in Travelers Rest, SC. That preserve was established to protect the bunched arrowhead. There was a proposal to intensively develop an adjacent 56 acres. That proposal has now been withdrawn, and DNR has applied for a USFWS grant to acquire the property. We have found HN on that property, as well as bunched arrowhead. The Heritage Trust manager for our area has surveyed the property and has a count of the HN populations on that property.

In addition, there is property adjacent to the Preserve and the proposed development property owned by a conservation-minded person, Johnny Stone. Some years ago, he enrolled some of his property in the Heritage Trust Program because of the presence of bunched arrowhead. We found HN on his property, in addition to the bunched arrowhead, and in close proximity to it.

We did not survey the Blackwell HTP for HN, but it is possible there are some HN populations on the existing HTP.

3. Jeff Beacham and I and others have worked to try to deal with the storm water on the site of Gateway Elementary School in Travelers Rest. The campus of that school includes an undeveloped woodland that is braided with seeps and streams, which include the bunched arrowhead. Stormwater has impacted the bunched arrowhead in the woodland. We have found HN on that property, as well.

4. In the course of checking on mitigation activities in the area for SELC, I ran across a subdivision in Greer, Boulder Creek, where the developer was required to put aside land because of the presence of HN on it. Jeff and I have met with the Homeowners Association and visited the site. There are populations of HN on the property, and the properties in question have been put aside. The HOA was unaware of the plants, however, until we contacted them and met with them. The mitigation requirements required the developer to put in place a plan with the HOA for the long term protection of the plant, which had not been done. I am sure the HOA would be happy for you to come and see the plant.

This mitigation was done under a Biological Opinion for HN done by the USFWS. It would be good if you could survey the USFWS records for any other BiOps for HN, and we could check on their status, too. Attached are some of the documents related to this one.

There are also other plants on neighboring properties upstream and downstream of these mitigation properties. I wrote the property owners seeking to purchase those portions, but have never heard back. If you wanted to pursue them, that would be great, too!

5. Finally, if you know of any other opportunities to preserve and protect populations of this plant, let us know. We would be happy and pleased to work with you on the effort. I am particularly interested in the subdivision populations you mentioned. If you could send me information on those sites and if they are in our area, we could visit them and see what's up. There may be opportunities to protect the plants and/or acquire properties for protection.

Frank S. Holleman III

President

Naturaland Trust

148 River Street, Suite 110

Greenville, South Carolina 29601

(864) 979 9431

FrankHolleman@naturalandtrust.org

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the following would be very helpful:

- Who is working on H. naniflora in SC? And, what have you been up to?
- Does anyone have information on the following sites:

  Cherokee Creek near Cowpens (last Heritage update 2004)

  Spartanburg Water System Preserve (last Heritage update 2001)

  Claggett site in Raintree subdivision (last Heritage update 1991)

  UT to Spivey Creek (last Heritage update 1991)

  Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

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Disclaimer

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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Tuesday, February 6, 2018 11:54:26 AM
Attachments: HENA NCNHP EO Data Summary_mem_01312018 RNRComments.xlsx
Importance: High

Mike,

Check this out. I've added/updated info for NC in blue on the spreadsheet. I identified a few more "current" EOs. I've added them at the bottom so that you can incorporate them as you see fit (wasn't sure if they were intentionally not included).

I did not have any changes for the SC sheet. I heard back from the preserve manager from SC. All she could find was one, 2006 report for one of the preserves so that doesn't really help. I'm am working on getting more specific location data for the Gateway Elementary and Boulder Creek.

Let me know if you think the NC list looks good. Thanks.

Rebekah Reid

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Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
1	**23.000^**	A	Mill Creek Forest and Seep	1,733	>1000	2016	2015		Polk	N	NHP Comp Review and Mont Report.
2	**29.000^**	A	Island Creek Heath Bluff	50,541	>1000	2016	2016		Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
3	**31.000*^**	C?	NCDOT TIP: R-2824	1,062	>1000	2010	2001		Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
4	**32.000***	D	NCDOT TIP R-2824	457	100-500	2013	2011		Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
5	**44.000*^**	AB	Little Gunpowder Creek Rare Plant Site 1	617	500-1000	2015	2011		Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
6	**77.000***	CD	Little Gunpowder Creek Rare Plant Site 2	699	500-1000	2013	2007		Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
7	**87.000**	D	Catawba River: Lower Creek: Miller Creek	0	<100	2011	2011		Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
8	**93.000**	D	West Shelby Mesic Slope		100-500	2005	2005				Parent EO
	93.034	*D*	*West Shelby Mesic Slope*	*60*		*2005*	*2005*		*Clev*	*N*	
	93.035	*D*	*First Broad River: Brushy Creek*	*< 100*		*2016*	*2001*		*Clev*	*N*	*8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.*
9	**96.000**	A	Murrays Mill/Upper Balls Creek NA		>1000	2013	2010				Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
	*96.038^*	*CD*	*Catawba River: Deal Property*	*100 200*		*1996*	*1996*		*Cata*	*N*	
	*96.039^*	*D*	*Murrays Mill/Upper Balls Creek NA*	*< 50*		*2002*	*2002*		*Cata*	*?*	*Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)*
	96.184^*	*A*	*Murrays Mill/Upper Balls Creek NA*	*11,860*		*2013*	*2010*		*Cata*	*Y*	*NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)*
10	**98.000**	CD	Cat Square Heartleaf Forest		100-500	2012	2001				Parent EO
	98.002	*X*	*South Fork Catawba River, Indian Creek*	*0*		*1957*	*1980*		*Linc*	*N*	*Extirpated*
	98.003	*D*	*Cat Square Heartleaf Forest*	*160*		*2001*	*1995*		*Linc*	*N*	*presence noted in 2001, 160 plants counted in 1995*
	98.004	*CD*	*Cat Square Heartleaf Forest*	*200*		*2001*	*2001*		*Linc*	*N*	
	98.060	*D*	*NCDOT TIP: B-2119*	*20 50*		*2012*	*2001*		*Linc*	*N*	*EO is associated with NC DOT project B-2119*
11	**99.000**	A	Big Horse Creek Rare Plant Site	106,940	>1000	2015	2015				Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
	*99.009^*	*AB*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*Presence noted in 2012 - no count made, 500 estimate plants in 2005*
	*99.010^*	*A*	*Kudzu Farm Rare Plant Site*	*n/a*		*2014*	*2013*		*Ruth*	*N*	*33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.*
	*99.037^*	*C*	*Broad River: Hunter Road*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.*
	*99.052^*	*C*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2001*		*Ruth*	*N*	*200-300*
	*99.053^*	*D*	*Broad River: McKinney Bridge*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*<35*
	*99.055^*	*AB*	*Broad River: Richardson Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*included with EO 37. NHP Comp Review and Mont Report.*
	*99.061^*	*B*	*Broad River: UT at SR1115 and 1116*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*750-1000*
	*99.062^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*200-500. NHP Comp Review and Mont Report.*
	*99.063^*	*D*	*Broad River: Hayes Lake*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*20-25*
	*99.075^*	*A*	*Brice Rare Plant Site*	*n/a*		*2013*	*2013*		*Ruth*	*N*	*>7000. NHP Comp Review and Mont Report.*
	*99.076^*	*BC*	*Big Horse Rare Plant Site*	*n/a*		*2015*			*Ruth*	*Y*	*included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.*
	*99.079^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2012*	*2001*		*Ruth*	*N*	*200-300. NHP Comp Review and Mont Report.*
	*99.090^*	*D*	*Broad River: Richardson Creek*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*100-200*
	*99.121^*	*B*	*Broad River: Dills Creek*	*n/a*		*2004*	*2004*		*Ruth*	*N*	*300*
	*99.172^*	*D*	*Big Horse Rare Plant Site*	*n/a*		*2012*	*2012*		*Ruth*	*Y*	*50-100, Parris Heartleaf RHA voluntary agreement.*
	*99.181^*	*AB*	*Broad River: Dills Creek*	*n/a*		*2012*	*2001*		*Ruth*	*?*	*This subocccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.*
	*99.182^*	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.249	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.*
	99.250	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.251	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.267	*CD*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*150-250*
	99.268	*D*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*25-30*
	99.319	*E*	*Broad River: Big Horse Creek*	*unk*		*2012*	*2012*		*Ruth*		*observed but no count made.*
12	**100.000**	A	Broad River/Sandy Run NA		>1000	2012	2012				Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
	*100.014^*	*C?*	*Broad River/Sandy Run NA*	*177*		*2009*	*2001*		*Clev*	*N*	*EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000*
	*100.049^*	*A*	*Broad River/Sandy Run NA*	*1,118*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.*
	*100.050^*	*A*	*Broad River/Sandy Run NA*	*4,801*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.*
	*100.051^*	*A*	*Broad River/Sandy Run NA*	*2,363*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.*
	*100.073^*	*A*	*Broad River/Sandy Run NA*	*13,595*		*2012*	*2012*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.*
	*100.074^*	*B*	*Broad River/Sandy Run NA*	*722*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.*
	*100.149^*	*A*	*Broad River/Sandy Run NA*	*3,280*		*2012*	*2009*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.233^*	*A*	*Broad River/Sandy Run NA*	*3,383*		*2012*	*2012*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)*
	100.235	*CD*	*Broad River: Trib N of Broad River and SE of Lake Houser*	*100 200*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.236^*	*C*	*Broad River/Sandy Run NA*	*150 300*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.237^*	*E*	*Broad River/Sandy Run NA*	*> 200*		*2012*	*2001*		*Clev*	*N*	*Outside Broad River Tract*
	*100.238^*	*A*	*Broad River/Sandy Run NA*	*1,865*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.239^*	*D*	*Broad River/Sandy Run NA*	*165*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.240^*	*F*	*Broad River/Sandy Run NA*	*20*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - F*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes	
	100.241^	D	Broad River/Sandy Run NA	115		2012	2008		Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)	
	100.246^	D	Broad River/Sandy Run NA	< 100		2001	2005		Clev	N	Outside Broad River Tract	
13	**125.000^**	A	New Hope Springhead Swamp		>1000	2016	2015		Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.	
14	**154.000^**	C	Facebook Site	2,576	>1000	2016	2015		Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.	
15	**157.000*^**	AB	First Broad River: Crooked Run Creek	330	100-500	2010	2005		Clev	N	DOT no longer monitors, too far from ROW.	
16	**158.000*^**	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	100-500	2016	2016		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.	
17	**176.000**	A	Davenport Road/Mountain View Rare Plant Site	6,750	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	176.167^	A	Davenport Road/Mountain View Rare Plant Site	n/a		2005	2015		Ruth	N	included with EO 107. NHP Comp Review and Mont Report.	
	176.168^	A	Davenport Road/Mountain View Rare Plant Site	n/a		2005	2005		Ruth	N	1113. NHP Comp Review and Mont Report.	
	176.169^	D	Davenport Road/Mountain View Rare Plant Site	n/a		2016	2016		Ruth	N	35. NHP Comp Review and Mont Report.	
	176.170^	C	Davenport Road/Mountain View Rare Plant Site	n/a		2016	2015		Ruth	N	191. NHP Comp Review and Mont Report.	
18	**177.000**	A	Broad River: Floyds Creek	12,687	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	177.016^	E	Broad River: Floyds Creek	n/a		2014	2012		Ruth	N	5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).	
	177.107^	B	Broad River: Floyds Creek	n/a		2008	2015		Ruth	N	241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remianing plants have no formal protection. (TB 9/21/2017)	
	177.122^	B?	Broad River: Floyds Creek	n/a		2008	2007		Ruth	N	123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).	
	177.163^	B	Broad River: Floyds Creek	n/a		2016	2015		Ruth	N	included with EO 107	
	177.164^	A	Broad River: Floyds Creek	n/a		2016	2005		Ruth	N	537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)	
	177.165^	C	Broad River: Floyds Creek	n/a		2005	2005		Ruth	N	included with EO 107	
	177.166^	CD	Broad River: Floyds Creek	n/a		2005			Ruth	N	included with EO 107	
19	**178.000**	A	Catawba River: Hoyle Crk-Micol Crk		>1000	2013	2016				Parent EO.	
	178.159*^	A	Catawba River: Hoyle Crk-Micol Crk	2182		2013	2005		Burk	N	Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.	
	178.160^	A	Catawba River: Hoyle Crk-Micol Crk	733		2013	2008		Burk	N	loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)	
	178.161^	A	Catawba River: Hoyle Crk-Micol Crk	2,754		2009			Burk	N	In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.	
	178.254^	D?	Catawba River: Hoyle Crk-Micol Crk	> 168		2010	2010		Burk	Y	Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).	
	178.255^	D	Catawba River: Hoyle Crk-Micol Crk	unk		2006	2006		Burk	Y	286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.	
	178.256^	C?	Catawba River: Hoyle Crk-Micol Crk	> 376		2010	2010		Burk	Y	Permanent conservation easement with Burke Cty and Public School System. Considerable number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).	
	178.280^	C	Catawba River: Hoyle Crk	126		2009	2009		Burk	Y	Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)	
	178.281^	E	Catawba River: Hoyle Crk-Micol Crk	unk		2009	2009		Burk	N	presence noted, no count made - outside of NCDOT ROW	
	178.282^	E	Catawba River: Hoyle Crk-Micol Crk	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.283	E	Catawba River: McGalliard Creek	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.284	E	Catawba River: McGalliard Creek	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.310	A	Megalliard Creek Slopes; Lake Rhodhiss	1,500 2,000		2016	2016		Burk	Y	Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.	NHP
20	**179.000**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		>1000	2012	2005				Parent EO	
*	179.030*	CD	NCDOT TIP R-2824	3,291		2013	2001		Cata	N	DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants total in the EO. Last report (2013)documented 4,719 plants.	
	179.162*	D	NCDOT TIP R-2825	21		2012	2005		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.	
21	**206.000**	D	Buffalo Creek: Ravine	90	<100	2007	2007		Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
22	**208.000^**	A	Buffalo Creek: Potts Creek	50 100	<100	2012	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
23	**214.000**	A	Buffalo Creek: Tributaries N and S of SR 2047		>1000	2012	2000				Parent EO	
	214.201^	D	Buffalo Creek: Tributary S	64		2000	2000		Clev	?	14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT	
	214.202^	A	Buffalo Creek: Ravine N	1,627		2000	2000		Clev	?	14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.	
	214.203^	B	Buffalo Creek: 3rd Tributary S	96		2007	2007		Clev	?	110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?	
	214.204^	A?	Buffalo Creek: S of SR 2128	?		2000	2000		Clev	?	3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT	
	214.205^	D	Buffalo Creek: N of SR 2128	171		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.	
	214.209^	BC	Buffalo Creek: Tributary E of County Fairgrounds	196		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.	
	214.212^	D	Buffalo Creek: Slope along Trib just N of SR 2047	97		2000	2000		Clev	N	In DOT study area for R-2707. No formal protection.	
	214.213^	CD	Buffalo Creek: Ravine just S of SR 2047	50 100		2012	2012		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT	
24	**216.000**	A	Buffalo Creek: Kings Mountain Res		>1000	2016	2000				Parent EO	
	216.028	B	Buffalo Creek Rare Plant Site	250		2016	2016		Clev	Y	This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)	
	216.196	D	Buffalo Creek: Friendship Chapel	56		2006	2006		Clev	N	In Dot study area. No formal protection.	
	216.197^	A	Buffalo Creek: Kings Mountain Res	2,067		2000	2000		Clev	?	NC DOT plans NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement	
	216.198^	B	Buffalo Creek: Kings Mountain Res	450		2007	2007		Clev	N	In Dot study area. No formal protection.	
	216.199^	B	Buffalo Creek: Kings Mountain Res	432		2007	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.	
	216.200^	D	Buffalo Creek: Kings Mountain Res	55		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT	
25	**217.000**	B	Broad River: Brushy Creek		>1000	2016	2016				Parent EO	
	217.190	F	Broad River: Brushy Creek	0		2000	2006		Clev	N	No plants found.	
	217.191*	D	Broad River: Brushy Creek	264		2014	2000		Clev	Y	DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.	
	217.192	C	Broad River: Brushy Creek	494		2016	2016		Clev	Y	NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).	
	217.193	C	Broad River: Brushy Creek	271		2000	2000		Clev	?	NC DOT proposes to protect Site 9 through a conservation easement.	
	217.305	CD	Washburn Switch Business Park	70		2015	2015		Clev	N	Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
26	**227.000^**	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	>1000	2014	2014		Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?
27	**232.000**	A?	Buffalo Creek Rare Plant Site		500-1000	2012	2005				Parent EO.
	232.046	*A*	*Buffalo Creek Rare Plant Site*	*500*		*2005*	*2005*		*Clev*	*N*	*Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
	232.231	*D*	*Buffalo Creek Rare Plant Site*	*20*		*2012*	*2012*		*Clev*	*N*	*Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
28	**243.000**	AB	Jacob Fork West Corridor		>1000	2012	2007				Parent EO
	*243.012^*	*A*	*Jacob Fork West Corridor*	*> 1,000*		*1995*	*1995*		*Cata*	*?*	*Catawba County Wildlife Club RHA voluntary agreement.*
	*243.242^*	*D*	*Jacob Fork West Corridor*	*4*		*2005*	*2005*		*Cata*	*N*	
	*243.269^*	*B*	*Jacob Fork West Corridor*	*> 200*		*2007*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).*
	*243.270^*	*C?*	*Jacob Fork West Corridor*	*75 100*		*2012*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.*
29	**245.000**	AB	Floyds Creek Tributray Rare Plant Site		>1000	2010	2005				Parent EO
	245.091	*D*	*Broad River: Floyds Creek*	*30*		*2012*	*2003*		*Ruth*	*N*	
	245.113	*C*	*Floyds Creek Tributray Rare Plant Site*	*1,113*		*2010*	*2007*		*Ruth*	*N*	*7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?*
	245.175	*C*	*Floyds Creek Tributray Rare Plant Site*	*unk*		*2010*	*2007*		*Ruth*	*N*	*included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.*
30	**247.000**	A	New Bethel Rare Plant Site		>1000	2015	2015				Parent EO, NC DOT Mitigation Site
	247.013	*D*	*Sandy Mush Outcrop*	*< 100*		*2005*	*2005*		*Ruth*	*N*	
	247.056	*D*	*Broad River: Floyds Creek*	*< 150*		*2002*	*2001*		*Ruth*	*N*	
	*247.080^*	*D*	*Broad River: Floyds Creek*	*50*		*2012*	*2003*		*Ruth*	*N*	*No plant count made in 2012. 50 plants counted in 2003.*
***	*247.106*^*	*A*	*New Bethel Rare Plant Site*	*4,547*		*2015*	*2008*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).*
	*247.114^*	*D*	*Broad River Floyds Creek*	*0*		*2010*	*2003*		*Ruth*	*N*	*14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017*
	*247.115^*	*C*	*Broad River Floyds Creek*	*133*		*2005*	*2007*		*Ruth*	*N*	*Combine with EO 114*
	*247.173^*	*D*	*Broad River Floyds Creek*	*102*		*2005*	*2003*		*Ruth*	*N*	*inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??*
	*247.174^*	*D*	*Broad River Floyds Creek*	*84*		*2010*	*2003*		*Ruth*	*N*	*35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area*
***	*247.286*^*	*B*	*New Bethel Rare Plant Site*	*326*		*2015*	*2015*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.*
31	**248.000**	C	Jonas Road Rare Plant Site		100-500	2005	2005				Parent EO
	248.040	*C*	*Jonas Road Rare Plant Site*	*150 200*		*2005*	*2005*		*Ruth*	*N*	
	248.054	*D*	*Broad River: McKinney Creek*	*20 30*		*2014*	*2001*		*Ruth*	*N*	*20-30 plants noted for last count in 2005*
32	**252.000**	B	South Fork Catawba River, Henry Fork		100-500	2007	2005				Parent EO
	252.019	*D?*	*NCDOT TIP: R-0085*	*unk*		*2007*	*2007*		*Cata*	*?*	*EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.*
	252.020	*B*	*NCDOT TIP: R-0086*	*296*		*2007*	*2005*		*Cata*	*?*	*May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.*
33	**271.000**	C?	Pott Creek	5 6	<100	2012	2012		Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
34	**272.000**	BC	No Business Creek, Boyd Tract	75 150	100-500	2007	2007		Clev	N	
35	**274.000**	A?	Broad River/Sandy Run NA	100	100-500	2012	2008		Clev	Y	Broad River Greenway, Town of Boiling Springs
36	**275.000***	C	Buffalo Shoals Creek	257	100-500	2014	2014		Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
37	**276.000^**	A	Cliffside Steam Station	39,535	>1000	2016	2016		Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
38	**277.000**	D	Hickory: Martin Marietta Quarry	0	extripated	2011	2011		Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
39	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	?	<100	2009	2009		Linc	N	small
40	**287.000**	AB	Fox Knoll Farm	?	???	2016	2016		Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
41	**291.000**	C	Gunpowder Creek	82	???	2012	2010		Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
42	**292.000**	D	Forest City: Adj to Isothermal CC	150	100-500	2010	2010		Ruth	N	Owner, Ruthford County.
43	**293.000**	E	Killian Crossroads	unk	???	2010	2010		Cata	N	No plant count in EO data.
44	**295.000**	B	Hickory Area		100-500	2016				Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
	295.021	*A*	*Hickory Area, Catawba River: Geitner Park*	*> 300*		*2005*	*2005*		*Burk*	*?*	*Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?*
	295.294	*C*	*Hickory Area: Bud Geitner Park Transplant Site*	*153*		*2016*	*2014*		*Burk*	*?*	*Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.*
	295.313	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cata*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.*
	295.314	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cald*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).*
45	**296.000**	CD	UT of Kings Mountain Res	100	100-500	2012	2012		Gast	N	
46	**297.000**	CD	Beaverdam Crk at First Broad River	unk	???	2011	2011		Clev	N	No plant count in EO data.
47	**298.000**	C	Brushy Creek Headwaters	250 300	100-500	2014	2014		Clev	N	
48	**299.000**	D	Lincoln County, SR-1314	27	<100	2014	2014		Linc	N	In DOT study. No formal protection.
49	**300.000**	D	Levan Family Farm	50	<100	2013	2013		Ired	N	
50	**302.000**	A	Rhyne Conservation Preserve		>1000	2016	2014				Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
	302.047	*D*	*NCDOT Project R-617C, South Fork Catawba*	*5*		*2005*	*2005*		*Linc*	*N*	*In DOT ROW, no formal protection.*
	302.262	*A*	*Rhyne Conservation Preserve*	*19,873*		*2016*	*2016*		*Linc*	*Y*	*Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.*
51	**303.000**	AB	Smith Cliff/Henry Fork River	?	100-500	2015	2015		Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
52	**304.000**	B?	Simms Hill/Little River Uplands	200 250	100-500	2015	2015		Burk	Y	Conservation site managed by the Foothills Conservancy of NC
53	**306.000**	D	Fanjoy Road Site	75	<100	2015	2015		Ired	N	
54	**308.000**	C	Glade Creek, Alex County	2,194	>1000	2017	2017		Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
55	**309.000**	D?	South Mountains Pleasant Grove Uplands	?	<100	2016	2016		Burk	N	few
56	**311.000**	A	Collinsville (Hughes) Creek Slopes	200 750	100-500	2016	2016		Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
57	**312.000**	A	Richardson Creek trib above Toms Lake	?	>1000	2016	2016		Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
58	**316.000**	C	Northern Catawba County		???	2017	2017			?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
59	316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	500-1000	2006	2006		Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
	316.315	*D*	*NC-127/Cloninger Mill Road*	*60*		*2017*	*2017*		*Cata*	*?*	*Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A*
60	**317.000**	D	NCDOT TIP R-3603A	30	<100	2017	2017		Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
61	**318.000**	C	Burke County - Drowning Creek UT	356	100-500	2017	2017		Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
62	**320.000**	E	Hickory Creek - UT (Shelby High School)	15	<100	2016	2016		Clev		
63	**321.000**	B	Gunpowder Creek: South of Hudson	2475	>1000	2012	2012		Cald		NCDOT
	Add		*Rock Barn Solar Farm*	*821*					*Cata*	*Y*	*Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded.*	*NHP*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
			Total	340,470							

*	DOT monitors
^	In 2011 5-YR Review as Populations estimated to contain >1,000 plants.
	Pops/subpops >1,000 plants, current data.
green	Broad River Greenway

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
1	**23.000**	**23.000**	A	Mill Creek Forest and Seep	>1000	very high	Polk	2016	
2	**29.000**	**29.000**	A	Island Creek Heath Bluff	>1000	very high	Burk	2016	
3	**31.000**	**31.000**	C?	NCDOT TIP: R-2824	>1000	very high	Cata	2015	
4	**32.000**	**32.000**	D	NCDOT TIP R-2824	100-500	moderate	Cata	2015	
5	**44.000**	**44.000**	AB	Little Gunpowder Creek Rare Plant Site 1	500-1000	high	Cald	2015	
6	**77.000**	**77.000**	CD	Little Gunpowder Creek Rare Plant Site 2	500-1000	high	Cald	2015	
7	**87.000**	**87.000**	D	Catawba River: Lower Creek: Miller Creek	<100	low	Cald	2011	likely extirpated, do we want to include this one?
8	**93.000**	**34; 35**	D	West Shelby Mesic Slope	100-500	moderate	Clev	2016	
9	**96.000**	**38; 39; 184**	A	Murrays Mill/Upper Balls Creek NA	>1000	very high	Cata	2013	
10	**98.000**	**2; 3; 4; 60**	CD	Cat Square Heartleaf Forest	100-500	moderate	Linc	2012	
11	**99.000**	**9; 10; 37; 52; 53; 55; 61; 62; 63; 75; 76; 79; 90; 121; 172; 181; 182; 249; 250; 251; 267; 268; 319**	A	Big Horse Creek Rare Plant Site	>1000	very high	Ruth	2015	
12	**100.000**	**14; 49; 50; 51; 73; 74; 149; 233; 235; 236; 237; 238; 239; 240; 241; 246**	A	Broad River/Sandy Run NA	>1000	very high	Clev	2012	
13	**125.000**	**125.000**	A	New Hope Springhead Swamp	>1000	very high	Polk	2016	
14	**154.000**	**157; 158**	C	Facebook Site	>1000	very high	Ruth	2016	
17	**176.000**	**167; 168; 169; 170**	A	Davenport Road/Mountain View Rare Plant Site	>1000	very high	Ruth	2016	
18	**177.000**	**16; 107; 122; 163; 164; 165; 166**	A	Broad River: Floyds Creek	>1000	very high	Ruth	2016	
19	**178.000**	**159; 160; 161; 254; 255; 256; 280; 281; 282; 283; 284; 310**	A	Catawba River: Hoyle Crk-Micol Crk	>1000	very high	Burk	2013	
20	**179.000**	**30; 162**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	>1000	very high	Cata	2013	
21	**206.000**	**206.000**	D	Buffalo Creek: Ravine	<100	low	Clev	2007	
22	**208.000^**	**208.000**	A	Buffalo Creek: Potts Creek	<100	low	Clev	2012	
23	**214.000**	**201; 202; 203; 204; 205; 209; 212; 213**	A	Buffalo Creek: Tributaries N and S of SR 2047	>1000	very high	Clev	2012	
24	**216.000**	**28; 196; 197; 198; 199; 200**	A	Buffalo Creek: Kings Mountain Res	>1000	very high	Clev	2016	
25	**217.000**	**190; 191; 192; 193; 305**	B	Broad River: Brushy Creek	>1000	very high	Clev	2016	
26	**227.000**	**227.000**	A	Peaked Top Rare Plant Site/Foothills Landfill	>1000	very high	Cald	2014	
27	**232.000**	**46; 231**	A?	Buffalo Creek Rare Plant Site	500-1000	high	Clev	2012	
28	**243.000**	**12; 242; 269; 270**	AB	Jacob Fork West Corridor	>1000	very high	Cata	2012	
29	**245.000**	**91; 113; 175**	AB	Floyds Creek Tributray Rare Plant Site	>1000	very high	Ruth	2012	
30	**247.000**	**13; 56; 80; 106; 114; 115; 173; 174; 286**	A	New Bethel Rare Plant Site	>1000	very high	Ruth	2015	
31	**248.000**	**40; 54**	C	Jonas Road Rare Plant Site	100-500	moderate	Ruth	2014	

32	**252.000**	**19; 20**	B	South Fork Catawba River, Henry Fork	100-500	moderate	Cata	2007	
33	**271.000**	**271.000**	C?	Pott Creek	<100	low	Cata	2012	
34	**272.000**	**272.000**	BC	No Business Creek, Boyd Tract	100-500	moderate	Clev	2007	
35	**274.000**	**274.000**	A?	Broad River/Sandy Run NA	100-500	moderate	Clev	2012	
36	**275.000**	**275.000**	C	Buffalo Shoals Creek	100-500	moderate	Ired	2014	
37	**276.000**	**276.000**	A	Cliffside Steam Station	>1000	very high	Clev/Ruth	2016	
38	**277.000**	**277.000**	D	Hickory: Martin Marietta Quarry	extripated	extripated	Cata	2011	
39	**279.000**	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	<100	low	Linc	2009	
40	**287.000**	**287.000**	AB	Fox Knoll Farm	100-500	moderate	Polk	2016	found newer data - "several hundred clumps"
41	**291.000**	**291.000**	C	Gunpowder Creek	<100	low	Cald	2012	
42	**292.000**	**292.000**	D	Forest City: Adj to Isothermal CC	100-500	moderate	Ruth	2010	
43	**293.000**	**293.000**	E	Killian Crossroads	???	unknown	Cata	2010	
44	**295.000**	**21; 294; 313; 314**	B	Hickory Area	100-500	moderate	Burk/Cata/Cald	2016	
45	**296.000**	**296.000**	CD	UT of Kings Mountain Res	100-500	moderate	Gast	2012	
46	**297.000**	**297.000**	CD	Beaverdam Crk at First Broad River	???	unknown	Clev	2011	
47	**298.000**	**298.000**	C	Brushy Creek Headwaters	100-500	moderate	Clev	2014	
48	**299.000**	**299.000**	D	Lincoln County, SR-1314	<100	low	Linc	2014	
49	**300.000**	**300.000**	D	Levan Family Farm	<100	low	Ired	2013	
50	**302.000**	**47; 262**	A	Rhyne Conservation Preserve	>1000	very high	Linc	2016	
51	**303.000**	**303.000**	AB	Smith Cliff/Henry Fork River	100-500	moderate	Burk	2015	
52	**304.000**	**304.000**	B?	Simms Hill/Little River Uplands	100-500	moderate	Burk	2015	
53	**306.000**	**306.000**	D	Fanjoy Road Site	<100	low	Ired	2015	
54	**308.000**	**308.000**	C	Glade Creek, Alex County	>1000	very high	Alex	2017	
55	**309.000**	**309.000**	D?	South Mountains Pleasant Grove Uplands	<100	low	Burk	2016	
56	**311.000**	**311.000**	A	Collinsville (Hughes) Creek Slopes	100-500	moderate	Polk	2016	
57	**312.000**	**312.000**	A	Richardson Creek trib above Toms Lake	>1000	very high	Ruth	2016	
58	**316.000**	**273; 315**	C	Northern Catawba County	500-1000	high	Cata	2017	
59	**317.000**	**317.000**	D	NCDOT TIP R-3603A	<100	low	Alex	2017	
60	**318.000**	**318.000**	C	Burke County - Drowning Creek UT	100-500	moderate	Burk	2017	
61	**320.000**	**320.000**	E	Hickory Creek - UT (Shelby High School)	<100	low	Clev	2016	
62	**321.000**	**321.000**	B	Gunpowder Creek: South of Hudson	>1000	very high	Cald	2012	

	59.000	59.000	C	Third Creek Rare Plant Site	100-500	moderate	Alex	2010	
	157.000	157.000	AB	First Broad River: Crooked Run Creek	100-500	moderate	Clev	2010	
	158.000	158.000	D	P Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork ar	100-500	moderate	Cata	2016	
				Rock Barn Solar Farm	500-1000	high	Cata	2010-2011	I don't think NHP knows about this one. Location - Not processed per agreement with D Not processed per agreement with D

From: Frank Holleman
To: Reid, Rebekah N
Subject: RE: [Scpca] Hexastylis naniflora in SC
Date: Tuesday, February 6, 2018 12:01:00 PM
Attachments: USFWS File on Boulder Creek Hexastylis naniflora.pdf
Importance: High

Jeff Beacham and I visited the site on November 28, 2016 at Boulder Creek. The plants were there.

I'm not sure when I last visited Gateway, but my guess is about 6 months ago, and saw the plants.

You can find the location of Gateway Elementary on the website of the Greenville school district.

Attached is the USFWS file on Boulder Creek, which I think will give you what you need.

Thanks!

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Tuesday, February 06, 2018 11:43 AM
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC

Hi Frank,

I wanted to follow-up on two sites you mentioned - Gateway Elementary and Boulder Creek. Can you tell me, when was the last time you saw plants at these locations? And, can you send me coordinates or drop a pin on Google maps for the location of these sites? I'm pretty sure I found Gateway on the map but I can't find Boulder Creek.

Thank you for all your help.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Nov 30, 2017 at 11:03 AM, Frank Holleman <fholleman@selcnc.org> wrote:
Rebekah,

I'm the President of Naturaland Trust, the land trust in Greenville that works to protect special places in the SC Piedmont and SC's Blue Ridge Mountains. We are interested in Hexastylis naniflora and seek to protect properties that include it. I'm also a volunteer with the SC Native Plant Society.

I'm copying Jeff Beacham, the former state president, because, as set out below, he and I have worked on a couple of projects involving it, and also our current state president, Lisa Lord. I'm also an attorney with the Southern Environmental Law Center, and sometimes the various projects overlap.

Here are some projects we've been involved in:

1. Peters Creek. Naturaland Trust acquired a parcel (about one acre, as I recall) that bisected the trail and the creek in the Peters Creek Heritage Trust Preserve, to protect the Preserve. We have not thoroughly checked that property, but we aren't aware of any HN on it.

2. We are currently working with SC DNR to try to acquire property next to the Blackwell Heritage Trust Preserve in Travelers Rest, SC. That preserve was established to protect the bunched arrowhead. There was a proposal to intensively develop an adjacent 56 acres. That proposal has now been withdrawn, and DNR has applied for a USFWS grant to acquire the property. We have found HN on that property, as well as bunched arrowhead. The Heritage Trust manager for our area has surveyed the property and has a count of the HN populations on that property.

In addition, there is property adjacent to the Preserve and the proposed development property owned by a conservation-minded person, Johnny Stone. Some years ago, he enrolled some of his property in the Heritage Trust Program because of the presence of bunched arrowhead. We found HN on his property, in addition to the bunched arrowhead, and in close proximity to it.

We did not survey the Blackwell HTP for HN, but it is possible there are some HN populations on the existing HTP.

3. Jeff Beacham and I and others have worked to try to deal with the storm water on the site of Gateway Elementary School in Travelers Rest. The campus of that school includes an undeveloped woodland that is braided with seeps and streams, which include the bunched arrowhead. Stormwater has impacted the bunched arrowhead in the woodland. We have found HN on that property, as well.

4. In the course of checking on mitigation activities in the area for SELC, I ran across a subdivision in Greer, Boulder Creek, where the developer was required to put aside land because of the presence of HN on it. Jeff and I have met with the Homeowners Association and visited the site. There are populations of HN on the property, and the properties in question have been put aside.

The HOA was unaware of the plants, however, until we contacted them and met with them. The mitigation requirements required the developer to put in place a plan with the HOA for the long term protection of the plant, which had not been done. I am sure the HOA would be happy for you to come and see the plant.

This mitigation was done under a Biological Opinion for HN done by the USFWS. It would be good if you could survey the USFWS records for any other BiOps for HN, and we could check on their status, too. Attached are some of the documents related to this one.

There are also other plants on neighboring properties upstream and downstream of these mitigation properties. I wrote the property owners seeking to purchase those portions, but have never heard back. If you wanted to pursue them, that would be great, too!

5. Finally, if you know of any other opportunities to preserve and protect populations of this plant, let us know. We would be happy and pleased to work with you on the effort. I am particularly interested in the subdivision populations you mentioned. If you could send me information on those sites and if they are in our area, we could visit them and see what's up. There may be opportunities to protect the plants and/or acquire properties for protection.

Frank S. Holleman III
President
Naturaland Trust
148 River Street, Suite 110
Greenville, South Carolina 29601
(864) 979 9431
FrankHolleman@naturalandtrust.org

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the

following would be very helpful:

- Who is working on H. naniflora in SC? And, what have you been up to?
- Does anyone have information on the following sites:

  Cherokee Creek near Cowpens (last Heritage update 2004)

  Spartanburg Water System Preserve (last Heritage update 2001)

  Claggett site in Raintree subdivision (last Heritage update 1991)

  UT to Spivey Creek (last Heritage update 1991)

  Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

Disclaimer

The information contained in this communication from the sender is confidential.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

April 11, 2006

FILE

Ms. Laura Belanger
Environmental Permitting Consultants
PO Box 3744
Greenville, SC 29608

Re: Boulder Creek Subdivision
Greenville County, South Carolina
FWS Log No: 2006-I-0420

Dear Ms. Belanger:

The U.S. Fish and Wildlife Service (Service) has reviewed the proposal for Boulder Creek (Jordan Road) Subdivision. The subject property is located on Jordan Road in Greenville County, South Carolina. The following comments are provided in accordance with section 7 of the Endangered Species Act (Act), as amended (16 U.S.C. 1531-1543).

Extant populations of the endangered *Hexastylis naniflora* have been identified on the proposed property along two of the creeks within the project boundary. No direct impacts to the population are anticipated. The developers of this site are aware of the H. naniflora population and assume responsibility for maintaining suitable habitat conditions for the species. As per our discussion on the March 27, 2006, site visit and follow-up letter from Laura Belanger dated March 28, 2006, a 25-foot protective buffer will be fenced and maintained in restrictive covenant to protect both populations. Twice annual monitoring will be conducted for the two years of construction, with monitoring reports submitted to the Service's Charleston Field Office. At the completion of construction, the final monitoring report will include detailed information regarding long-term monitoring and protection plans of the two *Hexastylis* populations.

Based on information provided, proposed conservation measures for the on-site population of *Hexastylis naniflora*, it is the opinion of the Service that the proposed action is not likely to adversely affect listed species.

Your interest in ensuring the protection of endangered species is appreciated. If you have further questions or require additional information, please contact Lora Zimmerman of this office at (843) 727-4707 ext. 226. In future correspondence concerning this project, please reference FWS Log No. 2006-I-0420.

Sincerely,

Catherine D. Duncan
Acting Field Supervisor

CDD/LLZ

cc:

Mr. Les Parker, USACOE, Columbia, SC

RECEIVED MAR 3 1 2006

Environmental Permitting Consultants, Inc.

US Fish and Wildlife Service
Charleston Field Office
176 Croghan Spir Road
Suite 200
Charleston, SC 29407

March 28, 2006

Attention: Lora Zimmerman

Dear Ms. Zimmerman,

This letter is in regards to the Boulder Creek NWP permit application submitted to Les Parker at the US Army Corps of Engineers January 30, 2006. The property contains two populations of *Hexastylis naniflora*. The first population is located in the far southwestern corner of the property and the second population is located near the southernmost property boundary.

As per our site meeting on March 27, 2006, propose to do the following:

- Place a 25 foot protective buffer around each population of *Hexastylis naniflora.*
- Include these buffered areas in the restrictive covenants proposed for the project.
- Place protective fencing around the populations of *Hexastylis naniflora.*
- Monitor the populations for two years, submitting to FWS four letter reports with photos documenting the populations.
- Upon completetion of construction and formation of the Homeowners Association, hosting a meeting with the Homeowners Association making them aware of the *Hexastylis naniflora* populations, potential impacts to the populations and how they can be avoided, and the terms of the restrictive covenants.

The populations and their approximate locations are provided in Figure 2 of the Protected Species Habitat Assessment preformed by Environmental Permitting consultants in January 2006. Please feel free to contact me (864) 271-3040 regarding any questions or concerns.

Sincerely,

Laura H. Belanger

Laura H. Belanger

Cc: Chip Fogleman, Fant Reichert & Fogleman, Inc.
Les Parker, USACE
Jed Aho, Midland Builders

P.O. Box 3744 • Greenville, South Carolina 29608 • (864) 271-3040 • Fax (864) 235-9299
P.O. Box 2346 • Hendersonville, North Carolina 28793 • Phone/Fax (828) 891-8414

PHONE LOG

FWS Contact: Morgan Wolf **Date:** 7/8/13

Time: 10:25 am

File No. 2006-I-0420

Received From: M. Wolf
Call Made To: Launa Belanger

Organization: EPC

Telephone #: 864-271-3040

Subject: Boulder Creek Subdivision, Ft. Hamilton pop'n. Greenville, SC

Discussion: Launa stated that the last contact EPC had w/ the builders (Midland Inc) or Midland Builders regarding this project was May 21, 2012, when they sent a monitoring proposal for Ft. Hamilton to the builders. She is not sure if they contracted w/ someone else to do the monitoring & restrictive covenants.

- Launa gave Midland contact as Jed Aho (-) FAX 864-848-7173
- I have researched Midland Builders and Midland Inc.; & Les Parker - Corps Contact cannot find a working telephone number

▷ but as of NOV 25, 2012, the development has been built.

- Last address/phone = 514 E North street, Greenville, SC 29601 / 864-[illegible] 5997

3:55 pm - spoke w/ Les Parker; he remembers project & will try to locate monitoring reports & restrictive cov.

Signature:

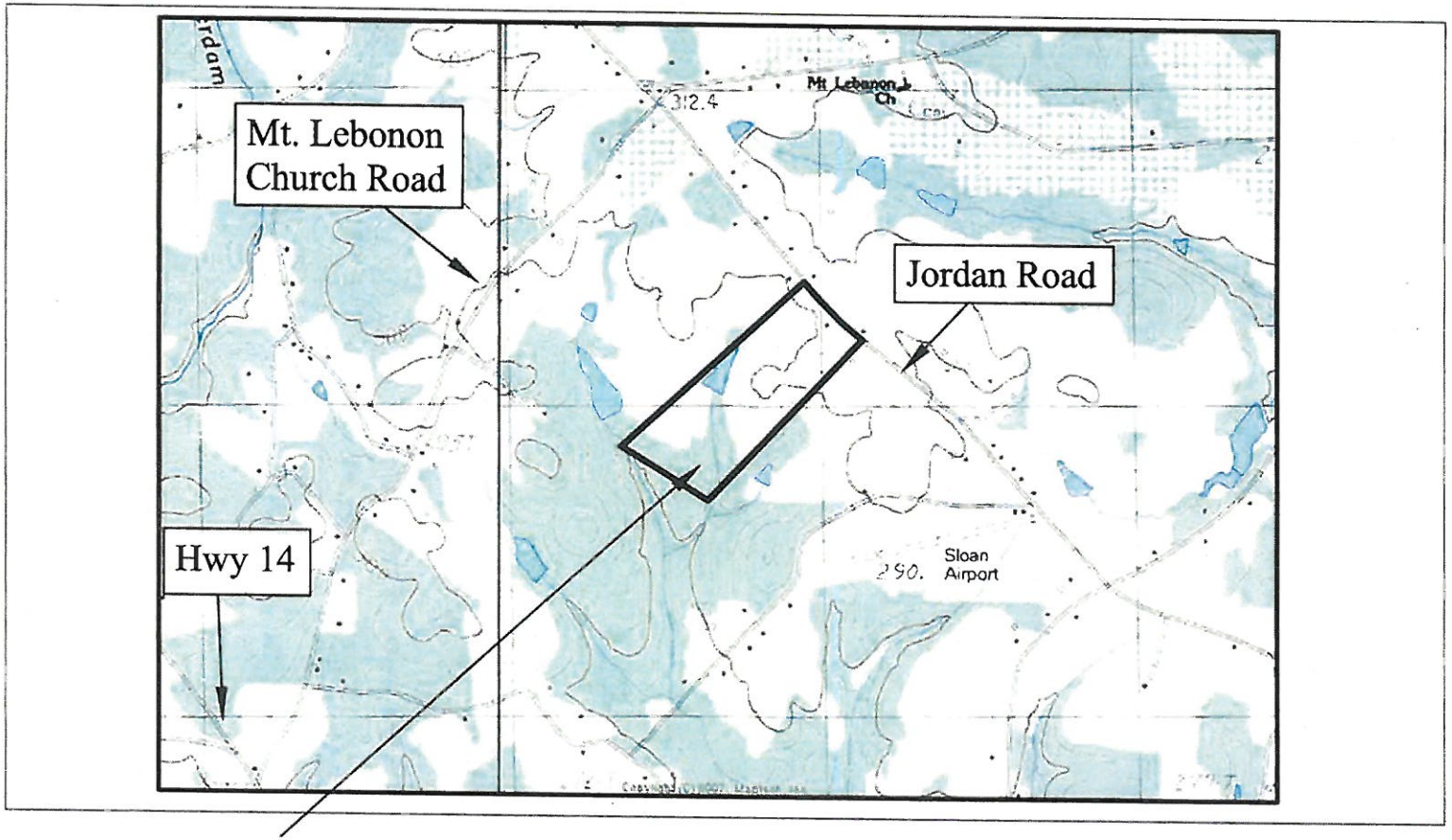
Img 11/05/12 printed 11/8/13 MKW



Google earth

feet 1000

meters 500



Source: USGS Topographic Series, Paris Mt. Quadrant
Greenville County, South Carolina

hear

Silver Jeep Liberty
828-553-9548

ENVIRONMENTAL PERMITTING CONSULTANTS, INC.	GRAPHIC SCALE 500 0 500 1000 1 inch = 1000 feet	REVISIONS NO. / DRAWN BY: / COMMENTS:	Boulder Creek Site Location Midland Builders Greenville County USACE P/N:.	SHEET NO. 1 OF 1

Post Office Box 3744
Greenville, SC 29608
Phone: (864) 271-3040
Fax: (864) 235-9299

DRAWN BY: lhb
DATE: 23jan2006
EPC PROJECT NO.: 05pcn131

→ How far off the stream are the plants?
How wide of a buffer do we need to put in basement?

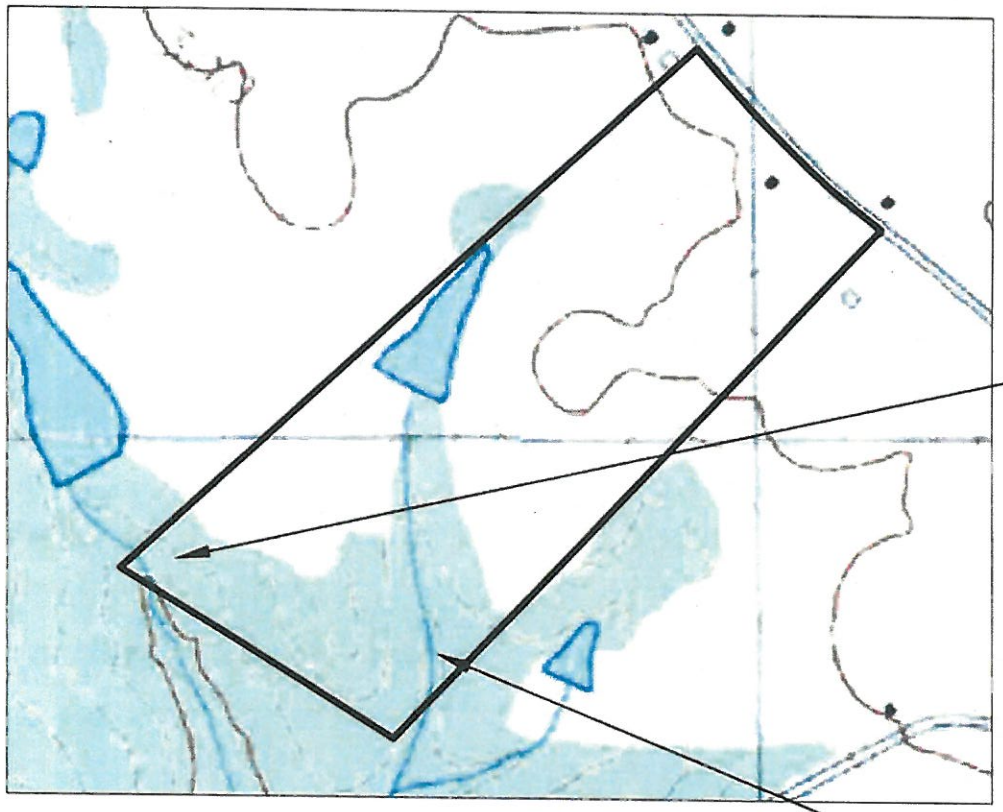
→ Plants will not be w/in lot lines

→ Annual monitoring reports during construction & beyond including habitat conditions & stem count.

→ will fence

→ 10 ft. buffer from plants
walking trails
plants/native vegetation
remove dead & down

Nationwide 39

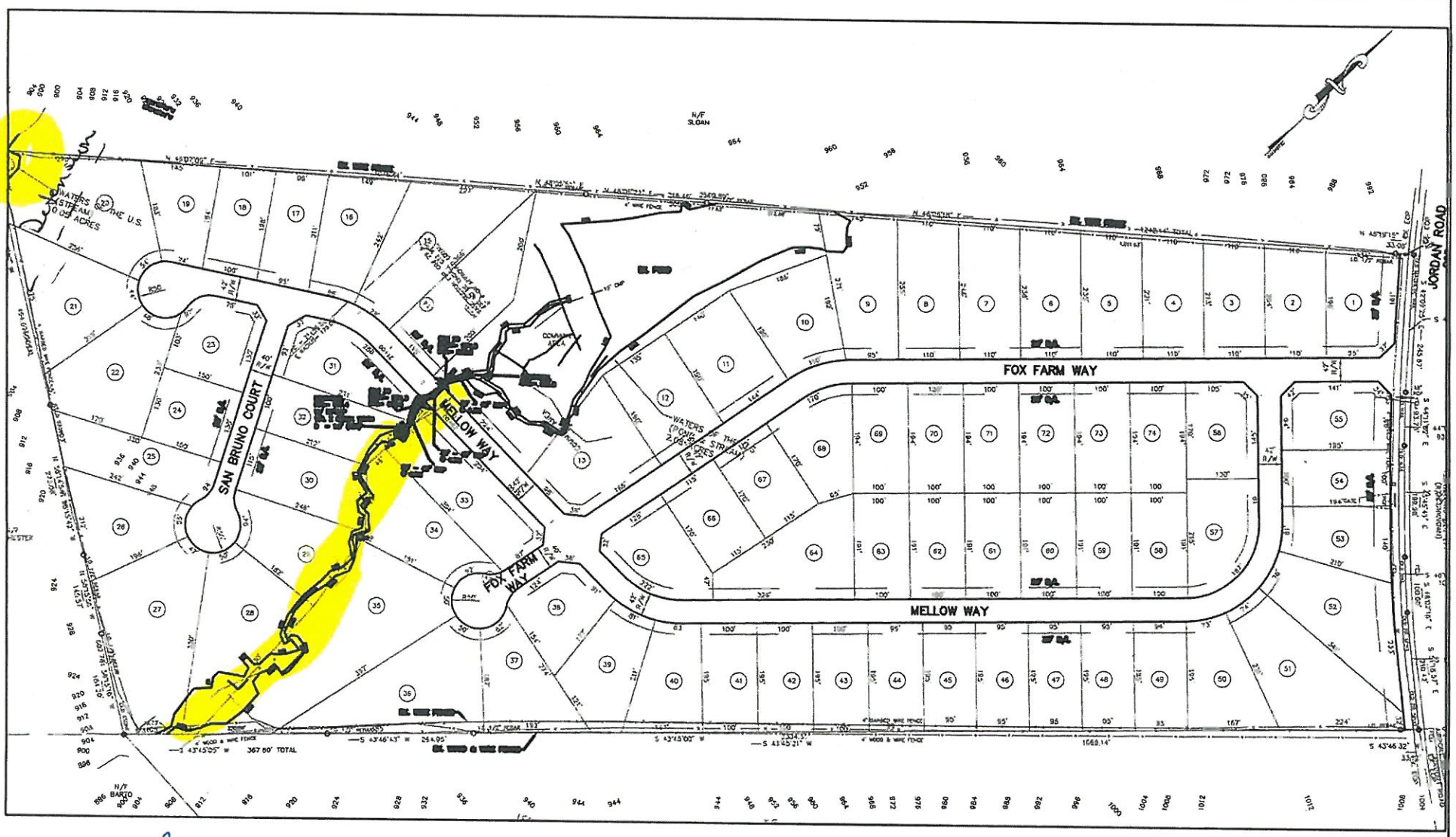






Populations of *Hexastylis naniflora* found on target property.

ENVIRONMENTAL PERMITTING CONSULTANTS, INC.	GRAPHIC SCALE 300 0 300 600 1 inch = 600 feet	REVISIONS NO.: DRAWN BY: COMMENTS:	Boulder Creek Species Location Map Midland Builders Greenville County	SHEET NO. 2
Post Office Box 3744 Greenville, SC 29608 Phone: (864) 271-3040 Fax: (864) 235-9299	DRAWN BY: lhb DATE: 23jan2006 EPC PROJECT NO.: 05pcm131		USACE P/N:.	OF 2



Balanger

Laura Balanger

ENVIRONMENTAL PERMITTING -CONSULTANTS, INC.	GRAPHIC SCALE 125 0 125 250 1 inch = 250 feet	REVISIONS NO. / DRAWN BY / COMMENTS	Boulder Creek Overview Midland Builders Greenville County USACE P/N:.	SHEET NO. 3 OF 5
Post Office Box 3744 Greenville, SC 29608 Phone: (864) 271-3040 Fax: (864) 235-9299	DRAWN BY: lhb DATE: 23jan2006 EPC PROJECT NO.: 05pcn131			



Photo 1: Representative photo of the cleared area on the target property.



Photo 2: Representative photo of the stream on the target property.



Photo 3: Area north of the pond, potential habitat for bunched arrowhead

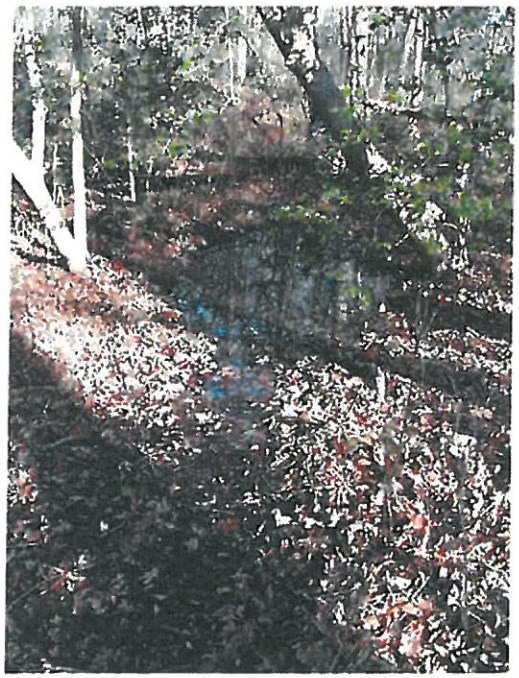


Photo 4: *Hexastylis naniflora* habitat



Hexastylis naniflora located on target property

From: Reid, Rebekah N
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Tuesday, February 6, 2018 12:25:02 PM
Importance: High

Thank you.

I found Gateway on the map and it is surrounded on three sides by wooded area. Is the dwarf-flowered heartleaf throughout the wooded area or in just one location? Unfortunately, I can't see many landscape features in the wooded area on the aerial. We are running a GIS model and the closer we can get to an exact location the better.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Tue, Feb 6, 2018 at 12:01 PM, Frank Holleman <fholleman@selcnc.org> wrote:

> Jeff Beacham and I visited the site on November 28, 2016 at Boulder Creek. The plants were there.
>
> I'm not sure when I last visited Gateway, but my guess is about 6 months ago, and saw the plants.
>
> You can find the location of Gateway Elementary on the website of the Greenville school district.
>
> Attached is the USFWS file on Boulder Creek, which I think will give you what you need.
>
> Thanks!
>
> **From:** Reid, Rebekah [mailto:rebekah_reid@fws.gov]
> **Sent:** Tuesday, February 06, 2018 11:43 AM
> **To:** Frank Holleman
> **Subject:** Re: [Scpca] Hexastylis naniflora in SC

Hi Frank,

I wanted to follow-up on two sites you mentioned - Gateway Elementary and Boulder Creek. Can you tell me, when was the last time you saw plants at these locations? And, can you send me coordinates or drop a pin on Google maps for the location of these sites? I'm pretty sure I found Gateway on the map but I can't find Boulder Creek.

Thank you for all your help.

Rebekah Reid

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On Thu, Nov 30, 2017 at 11:03 AM, Frank Holleman <fholleman@selcnc.org> wrote:

Rebekah,

I'm the President of Naturaland Trust, the land trust in Greenville that works to protect special places in the SC Piedmont and SC's Blue Ridge Mountains. We are interested in Hexastylis naniflora and seek to protect properties that include it. I'm also a volunteer with the SC Native Plant Society. I'm copying Jeff Beacham, the former state president, because, as set out below, he and I have worked on a couple of projects involving it, and also our current state president, Lisa Lord. I'm also an attorney with the Southern Environmental Law Center, and sometimes the various projects overlap.

Here are some projects we've been involved in:

1. Peters Creek. Naturaland Trust acquired a parcel (about one acre, as I recall) that bisected the trail and the creek in the Peters Creek Heritage Trust Preserve, to protect the Preserve. We have not thoroughly checked that property, but we aren't aware of any HN on it.

2. We are currently working with SC DNR to try to acquire property next to the Blackwell Heritage Trust Preserve in Travelers Rest, SC. That preserve was established to protect the bunched arrowhead. There was a proposal to intensively develop an adjacent 56 acres. That proposal has now been withdrawn, and DNR has applied for a USFWS grant to acquire the property. We have found HN on that property, as well as bunched arrowhead. The Heritage Trust manager for our area has surveyed the property and has a count of the HN populations on that property.

In addition, there is property adjacent to the Preserve and the proposed development property owned by a conservation-minded person, Johnny Stone. Some years ago, he enrolled some of his property in the Heritage Trust Program because of the presence of bunched arrowhead. We found HN on his property, in addition to the bunched arrowhead, and in close proximity to it.

We did not survey the Blackwell HTP for HN, but it is possible there are some HN populations on the existing HTP.

3. Jeff Beacham and I and others have worked to try to deal with the storm water on the site of Gateway Elementary School in Travelers Rest. The campus of that school includes an undeveloped woodland that is braided with seeps and streams, which include the bunched arrowhead. Stormwater has impacted the bunched arrowhead in the woodland. We have found HN on that property, as well.

4. In the course of checking on mitigation activities in the area for SELC, I ran across a subdivision in Greer, Boulder Creek, where the developer was required to put aside land because of the presence of HN on it. Jeff and I have met with the Homeowners Association and visited the site. There are populations of HN on the property, and the properties in question have been put aside. The HOA was unaware of the plants, however, until we contacted them and met with them. The mitigation requirements required the developer to put in place a plan with the HOA for

the long term protection of the plant, which had not been done. I am sure the HOA would be happy for you to come and see the plant.

This mitigation was done under a Biological Opinion for HN done by the USFWS. It would be good if you could survey the USFWS records for any other BiOps for HN, and we could check on their status, too. Attached are some of the documents related to this one.

There are also other plants on neighboring properties upstream and downstream of these mitigation properties. I wrote the property owners seeking to purchase those portions, but have never heard back. If you wanted to pursue them, that would be great, too!

5. Finally, if you know of any other opportunities to preserve and protect populations of this plant, let us know. We would be happy and pleased to work with you on the effort. I am particularly interested in the subdivision populations you mentioned. If you could send me information on those sites and if they are in our area, we could visit them and see what's up. There may be opportunities to protect the plants and/or acquire properties for protection.

Frank S. Holleman III

President

Naturaland Trust

148 River Street, Suite 110

Greenville, South Carolina 29601

(864) 979 9431

FrankHolleman@naturalandtrust.org

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the following would be very helpful:

- Who is working on H. naniflora in SC? And, what have you been up to?
- Does anyone have information on the following sites:

  Cherokee Creek near Cowpens (last Heritage update 2004)

  Spartanburg Water System Preserve (last Heritage update 2001)

  Claggett site in Raintree subdivision (last Heritage update 1991)

  UT to Spivey Creek (last Heritage update 1991)

  Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service

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From: Frank Holleman
To: Reid, Rebekah N
Subject: RE: [Scpca] Hexastylis naniflora in SC
Date: Tuesday, February 6, 2018 12:32:58 PM
Importance: High

We saw it in the woods directly behind the school, where there is a collection of braided seeps and streams. It was close to the streams. It is possible that it is throughout the woods; we haven't done a survey.

There are also other water features in all those woods, and we haven't surveyed them in any systematic way.

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Tuesday, February 06, 2018 12:25 PM
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC

Thank you.

I found Gateway on the map and it is surrounded on three sides by wooded area. Is the dwarf-flowered heartleaf throughout the wooded area or in just one location? Unfortunately, I can't see many landscape features in the wooded area on the aerial. We are running a GIS model and the closer we can get to an exact location the better.

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Attached is the USFWS file on Boulder Creek, which I think will give you what you need.

Thanks!

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Frank S. Holleman III
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Rebekah Reid

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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Tuesday, February 6, 2018 12:47:33 PM
Attachments: HENA SCNHP EO Data Summary_mem RNR Comments.xlsx
Importance: High

And, SC with location data updates...

For Gateway, the best I could get for a location was directly behind school near stream. I've supplied coordinates that are behind the school and what appears to be near a stream.

Rebekah Reid

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On Tue, Feb 6, 2018 at 11:54 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Mike,
>
> Check this out. I've added/updated info for NC in blue on the spreadsheet. I identified a few more "current" EOs. I've added them at the bottom so that you can incorporate them as you see fit (wasn't sure if they were intentionally not included).
>
> I did not have any changes for the SC sheet. I heard back from the preserve manager from SC. All she could find was one, 2006 report for one of the preserves so that doesn't really help. I'm am working on getting more specific location data for the Gateway Elementary and Boulder Creek.
>
> Let me know if you think the NC list looks good. Thanks.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
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On Mon, Feb 5, 2018 at 9:33 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Good morning!
>
> I've attached 2 spreadsheets to this email (for North and South Carolina). Within these files, I have created a separate sheet labeled "Populations Only", in which I took only the populations that have been detected within the last 10 years.....those populations then got a resilience ranking based on population size based off of the rules:
>
> >1,000 plants = very high
>
> 500-1,000 = high
>
> 100-500 = moderate
>
> <100 = low
>
> Rebekah....a few notes: for NC pops...I wasn't sure if a population was made up of multiple EOs, if the population number was an additional EO.. for example, if the population was labeled 100.000, and it was composed of 100.20, 100.21, and 100.22, is there just 3 EOs (20, 21, and 22), or are there 4 EOs (20, 21, 22, and 100)....I went with there only being 3 EOs, but all the data is preserved on the new sheet. Also, for SC...there are 2 populations at the end that I don't have EOs for... no problem, except for being able to spatially delineate these for the model, etc....
>
> Have a look... hopefully I haven't made any big mistakes!
>
> Thanks,
>
> Mike

On Mon, Feb 5, 2018 at 7:20 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Thanks, Mike. That all sounds good. I like the population size break down and will be interested to see what our experts think. Once you have the spreadsheet for current populations settled, send it my way. I will need to go through the spatial data and get it to Mark for the model. SC was supposed to send me data for their preserves but I haven't received it yet. I've reminded them again. My hope is that the preserve data is more current than what is in the SC EO data and we can add a few more populations to our list of current populations for SC. We'll see...
>
> Thanks!
>
> Rebekah Reid
>
> US Fish and Wildlife Service
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>
> On Fri, Feb 2, 2018 at 1:15 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Hi Rebekah,

Thanks for the info....very helpful. I'm using the spreadsheets with the data you provided to come up with a clean spreadsheet that shows only those populations for which the last observed/detection was no more than 10 years ago....this will change the narrative for number of populations, which is totally fine. Seems, as we discussed, the estimated number of populations came from data spread out over 20-30 years....we discussed not being too confident about the species actually being present, or especially abundance estimates that were older than 10 years...I will just be explicit about how the historical narrative on populations came from a wide time frame, but for the purposes of the SSA, we only focus on recent detections for the current condition of the species. As an example of what the estimates would be....for North Carolina, we go down from 90-something populations to 63....SC will be in the single digits. This is still a lot of populations, and the model will indicate there is a lot more available habitat that may or may not be occupied, but is suitable....will also point out that there are likely more populations at previous EO locations, but we did not want to include in the SSA analysis.

As for categorizing resilience based on population size....it seems the EO ranks consider threats, surrounding matrix, habitat and population numbers....because >1,000 plants is mentioned in many of the reports, I'd like to capture that....I'm thinking something like:

>1,000 plants = very high

500-1,000 = high

100-500 = moderate

<100 = low

This of course will be vetted through the experts via review of the SSA, and probably another round of elicitations. We will also discuss the subset of populations for which we have growth rate/trajectory data, but because we won't have this for every population, I think we stick with population size as an indicator of the resilience of a population.

Hope that all makes sense! Have a great weekend!

Mike

On Fri, Feb 2, 2018 at 11:51 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Mike,
>
> I spoke with Jame about EO Ranks.
>
> In an ideal world, the EO Rank would be updated with the last observance (so those two dates would be consistent). However, there may be a good reason for the discrepancy or it may have just been overlooked (Jame's comment was that they are only human). She asked me to pull out the discrepancies and she'd take a look. I'm working on that. Right now, it looks like maybe a third have that discrepancy.

There are EO Rank Specifications for HENA. This was in the back of the Range-wide Status Report and I missed it. I've pulled it out of the main document so we now all have easy access (see attached). Notice an A-ranked EO has >500 individuals...we talked about 1,000 as the magic number yesterday because of the previous reports but we may want to reconsider.

NCNHP did go through SCNHP's EO data and came up with 22 populations. Jame knows that a 2km buffer was used but she also thinks that habitat may have also been considered. That may account for the 18 vs 22 for SC - some of the larger aggregation of points may have had separations due to unsuitable habitat. Laura Robinson was the one to go through that data. If we want specifics, we will have to wait for her to return from maternity leave (sometime mid-February).

I've been playing phone tag with SCNHP but I did get this info in an email:

> The 100-or-1000 meter buffers are there to represent how exact (or inexact) we think a location might be, whereas the "30 meters" I mentioned yesterday is a minimum separation distance – i.e., in terms of distance, what should separate one occurrence record (of the same species) from the next? This is up to the biologist, but for plant observations we usually use a minimum distance of 30 meters.
>
> The confidence buffer and the separation distance are related in that, say, it wouldn't make sense to talk about a less-than-30-meter separation if you weren't confident that your GPS readings were accurate within 15 meters. But other separation considerations include – how stationary is the organism? at what scale is the biologist assessing population?
>
> I'm not sure how well any of this corresponds with NatureServe practices -- with no data manager on staff, we've been improvising!

I'm thinking we will just have to go with what we have for the SC data. NCNHP came up with 22 populations and I'm sure they have justification beyond just the 2km buffer so I'm comfortable with that.

I'll be in touch with any updated rank dates for the table. Thanks and have a great weekend!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
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Asheville, NC 28801
phone: 828-258-3939 x238
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--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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--
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Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
1	3	3852	H	Beaverdam Creek/3 mi east of Travelers Rest				1964	2009	GREE			
1	5	7689	CD	Sagittaria Hydrology Site		150	200	1991	2008	GREE			Doug Rayner (Wofford College) - emailed 12/12/17
1	6	1160	CD	Junction of SSR173 and SSR 262		75	100	1991	2008	GREE			
1	8	4875	BD	UT Beaverdam Creek/S-903		150		1991	2008	GREE			
1	15	1713	AC	DNR Bunched Arrowhead Preserve		1		1991	2010	GREE	Y	DNR Bunched Arrowhead Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
1	52	730	AC	DNR Belvue Springs Heritage Preserve		?		1999	2008	GREE		"numerous clumps", DNR Belvue Springs HP. Is this the same as the Bunched Arrowhead Preserve?	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
2	10	7931	H?	UT Enoree River				1985	2010	GREE			
2	51	6287	BC	DNR Clear Creek Heritage Preserve		1		1999	2008	GREE	Y	DNR Clear Creek Heritage Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	22	1649	BD	UT Tyger River/south of S-75		50	100	1991	2008	SPAR		same as 9058	
3	23	9058	BD	UT Tyger River/south of S-75						SPAR		same as 1649 (duplicate plant count)	
4	2	7399	BD	1.5 mi south of Gowensville/SC14		150		1991	2008	GREE			
4	4	3101	CD	Fairview Farms		75		1991	2008	SPAR			
4	24	6179	CD	UT Motlow Creek		50	100	1991	2008	SPAR			
4	32	5677	BD	Page Creek at Landrum HS		155		1991	2008	SPAR			
4	33	4879	BD	NW of Junction SC11 and SC14		168		1991	2008	GREE			
4	36	1993	BD	Clear Branch Creek		303		1991	2008	SPAR			
4	38	3367	BD	UT Spivey Creek	+	1000		1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
4	39	8503	CD	1 mi SW of US176 and S-209 in Ingleside		66		1991	2008	SPAR			
4	40	8504	BD	UT Clear Branch Creek		221		1991	2008	SPAR			
4	41	1460	CD	SC 14 and High Farm Road		50	100	1991	2008	SPAR			
4	42	8856	BD	1/4 mi E of SC14 and South Pacolet River		189		1991	2008	GREE/SPAR			
4	49	1450	AB	UT Page Creek/Campbell Ave		750	800	2001	2008	SPAR	?	2001: "new Spartanburg Water Systems preserve"	Spartanburg Water System (who?)
4	50	1449	BD	Page Creek Sewer Line		400	550	2001	2008	SPAR	?	2001: "an easment is being sought"	Spartanburg Water System (who?)
4	54	2719	BD	Headwater UT Wolfe Creek		400		2001	2008	SPAR	?	"On City of Landrum Property"	
4	59	13002	BD	Beaver Dam Creek/MetCalf		250	500	2005	2011	SPAR			
5	30	6009	BD	Greene Creek		100		1994	2008	SPAR			
6	25	878	CD	Lake William Bowen		10	20	1991	2008	SPAR			
7	37	6749	CD	Bear Creek		56		1991	2008	SPAR			
8	35	108	BD	Alverson Grove Church		74		1991	2008	SPAR			
9	34	7788	BD	Arrowood Branch		13		1991	2008	SPAR			
10	31	1730	H?	Blalock Res Site P				1984	2009	SPAR		NCNHP includes EO 7 and 31 as Blalock sites, 5-YR Review includes EO 7 and 29. 2km rule groups EO 7 and 29 together with EO 31 separate (>2km) but close by.	Spartanburg Water System (who?)
11	7	7013	BD	Taylor Blalock Res		3505		2016	2008	SPAR		James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
11	29	6010	H?	Blalock Res Site C				1984	2009	SPAR			Spartanburg Water System (who?)
12	20	3552	BD	Camp Mary Elizabeth		150		1991	2008	SPAR	?	Girl Scouts of America	Fred Parrish
12	21	1984	BD	Beaverdam Creek/Claggett Raintree		700		1991	2008	SPAR	?	SC Nature Conservancy	Kristen Austin (TNC SC) emailed 12/12/17, or Fred Parrish
12	55	2486	CD	UT North Tyger River/Woodridge		50		2001	2008	SPAR			
13	9	7930	CD	Chinquapin Creek		?		1991	2008	SPAR		"two small colonies"	Fred Parrish
13	13	6456	BD	UT Cleveland Park Lake		50		1991	2008	SPAR	?	City of Spartanburg - Cleveland Park	Fred Parrish
13	19	3551	BC	USC-Upstate		25	50	1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
13	46	2369	CD	Shoally Creek		25		1998	2008	SPAR			
13	53	8981	BC	USC-Upstate		250	300	2000	2008	SPAR		Is this a part of other USC population?	Doug Rayner (Wofford College) - emailed 12/12/17
13	56	6523	BD	Lawsons Fork Creek on US221		200	250	2001	2008	SPAR			
14	11	6097	AB	DNR Peters Creek Heritage Preserve		3306		2016	2008	SPAR	Y	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	14	2791	AB	DNR Peters Creek Heritage Preserve		5000		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve, Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	26	5183	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
14	27	4476	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	28	8667	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	47	6953	U	Cannon Campground Road and Kelly Road				1998	2008	SPAR			
14	48	2769	U	Kelly Road				1998	2008	SPAR			
14	57	4312	BD	Lincoln Memorial Cem/Cannon Campground Rd		450	600	1997	2012	SPAR			
15	16	916	BC	Cowpens NBF - Site 1		2823		2016	2008	CHER		US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09 28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP
15	17	5173	BC	Cowpens NBF - Site 3	+	130		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09 28.17)	Park manager (who?) or NCNHP
15	18	6825	BC	Cowpens NBF - Site 2		50		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09 28.17)	Park manager (who?) or NCNHP
16	1	235	BD	Cherokee Creek/SC 11		200		1991	2008	CHER			
16	44	3124	H?	SW side of SC 11 - 5.45 mi NW of I-85				1984	2009	CHER			
16	45	5554	U	Lenzer Circle				1989	2008	CHER			
16	60	13003	BD	Cherokee Creek/Bonner and Robin School Roads		1500		2004	2011	CHER			
17	43	7286	CD	McKee Drive		20		1991	2008	CHER			
18	12	1322	H?	Horse Creek				1986	2012	CHER			
				Boulder Creek Subdivision - Jordan Road		15	20	2006		GREE	Y	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
				Gateway Elementary School						GREE		"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

Populations	EO Number	EO Rank	Site Name	Total Estimated Plants	Resilience Category	Last Observed	County	Notes	RNR Notes
1	7; 29	BD	Taylor Blalock Res	>1000	Very High	2016	SPAR	James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	
2	11; 14; 26; 27; 28; 47; 48; 57	AB	DNR Peters Creek Heritage Preserve	>1000	Very High	2016	SPAR	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	
3	16; 17; 18	BC	Cowpens NBF - Site 1	>1000	Very High	2016	CHER	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	
4	?	?	Boulder Creek Subdivision - Jordan Road	<100	Low	2016	GREE	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17). Last seen in 2016 per F. Hollemon (02/06/18).	Two locations Not processed per agreement with Plaintiff/Requester. Coordinates located from paper maps.
5	?	?	Gateway Elementary School	<100	Low	2017	GREE	"number of clumps around trees near streams" (F. Hollemon 12/12/17). Last seen in 2017, not a full survey just noticed plants likely additional plants in wooded area. Plants located directly behind school per F. Hollemon (02/06/18)	"Directly behind school" is approximately Not processed per agreement with Plaintiff/Requester Not processed per agreement with Plaintiff/Requester

From: Reid, Rebekah N
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC
Date: Tuesday, February 6, 2018 2:40:25 PM

Great, thank you!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
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cell: 828-782-0090

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On Tue, Feb 6, 2018 at 12:32 PM, Frank Holleman <fholleman@selcnc.org> wrote:

> We saw it in the woods directly behind the school, where there is a collection of braided seeps and streams. It was close to the streams. It is possible that it is throughout the woods; we haven't done a survey.
>
> There are also other water features in all those woods, and we haven't surveyed them in any systematic way.
>
> **From:** Reid, Rebekah [mailto:rebekah_reid@fws.gov]
> **Sent:** Tuesday, February 06, 2018 12:25 PM
>
> **To:** Frank Holleman
> **Subject:** Re: [Scpca] Hexastylis naniflora in SC
>
> Thank you.
>
> I found Gateway on the map and it is surrounded on three sides by wooded area. Is the dwarf-flowered heartleaf throughout the wooded area or in just one location? Unfortunately, I can't see many landscape features in the wooded area on the aerial. We are running a GIS model and the closer we can get to an exact location the better.

Rebekah Reid

US Fish and Wildlife Service

Asheville Ecological Services Field Office

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On Tue, Feb 6, 2018 at 12:01 PM, Frank Holleman <fholleman@selcnc.org> wrote:

Jeff Beacham and I visited the site on November 28, 2016 at Boulder Creek. The plants were there.

I'm not sure when I last visited Gateway, but my guess is about 6 months ago, and saw the plants.

You can find the location of Gateway Elementary on the website of the Greenville school district.

Attached is the USFWS file on Boulder Creek, which I think will give you what you need.

Thanks!

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Tuesday, February 06, 2018 11:43 AM
To: Frank Holleman
Subject: Re: [Scpca] Hexastylis naniflora in SC

Hi Frank,

I wanted to follow-up on two sites you mentioned - Gateway Elementary and Boulder Creek. Can you tell me, when was the last time you saw plants at these locations? And, can you send me coordinates or drop a pin on Google maps for the location of these sites? I'm pretty sure I found Gateway on the map but I can't find Boulder Creek.

Thank you for all your help.

Rebekah Reid

US Fish and Wildlife Service

Asheville Ecological Services Field Office

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Asheville, NC 28801

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On Thu, Nov 30, 2017 at 11:03 AM, Frank Holleman <fholleman@selcnc.org> wrote:

Rebekah,

I'm the President of Naturaland Trust, the land trust in Greenville that works to protect special places in the SC Piedmont and SC's Blue Ridge Mountains. We are interested in Hexastylis naniflora and seek to protect properties that include it. I'm also a volunteer with the SC Native Plant Society. I'm copying Jeff Beacham, the former state president, because, as set out below, he and I have worked on a couple of projects involving it, and also our current state president, Lisa Lord. I'm also an attorney with the Southern Environmental Law Center, and sometimes the various projects overlap.

Here are some projects we've been involved in:

1. Peters Creek. Naturaland Trust acquired a parcel (about one acre, as I recall) that bisected the trail and the creek in the Peters Creek Heritage Trust Preserve, to protect the Preserve. We have not thoroughly checked that property, but we aren't aware of any HN on it.

2. We are currently working with SC DNR to try to acquire property next to the Blackwell Heritage Trust Preserve in Travelers Rest, SC. That preserve was established to protect the bunched arrowhead. There was a proposal to intensively develop an adjacent 56 acres. That proposal has now been withdrawn, and DNR has applied for a USFWS grant to acquire the property. We have found HN on that property, as well as bunched arrowhead. The Heritage Trust manager for our area has surveyed the property and has a count of the HN populations on that property.

In addition, there is property adjacent to the Preserve and the proposed development property owned by a conservation-minded person, Johnny Stone. Some years ago, he enrolled some of his property in the Heritage Trust Program because of the presence of bunched arrowhead. We found HN on his property, in addition to the bunched arrowhead, and in close proximity to it.

We did not survey the Blackwell HTP for HN, but it is possible there are some HN populations on the existing HTP.

3. Jeff Beacham and I and others have worked to try to deal with the storm water on the site of Gateway Elementary School in Travelers Rest. The campus of that school includes an undeveloped woodland that is braided with seeps and streams, which include the bunched arrowhead. Stormwater has impacted the bunched arrowhead in the woodland. We have found HN on that property, as well.

4. In the course of checking on mitigation activities in the area for SELC, I ran across a subdivision in Greer, Boulder Creek, where the developer was required to put aside land because of the presence of HN on it. Jeff and I have met with the Homeowners Association and visited the site. There are populations of HN on the property, and the properties in question have been put aside. The HOA was unaware of the plants, however, until we contacted them and met with them. The mitigation requirements required the developer to put in place a plan with the HOA for the long term protection of the plant, which had not been done. I am sure the HOA would be happy for you to come and see the plant.

This mitigation was done under a Biological Opinion for HN done by the USFWS. It would be good if you could survey the USFWS records for any other BiOps for HN, and we could check on their status, too. Attached are some of the documents related to this one.

There are also other plants on neighboring properties upstream and downstream of these mitigation properties. I wrote the property owners seeking to purchase those portions, but have never heard back. If you wanted to pursue them, that would be great, too!

5. Finally, if you know of any other opportunities to preserve and protect populations of this plant, let us know. We would be happy and pleased to work with you on the effort. I am particularly interested in the subdivision populations you mentioned. If you could send me information on those sites and if they are in our area, we could visit them and see what's up. There may be opportunities to protect the plants and/or acquire properties for protection.

Frank S. Holleman III

President

Naturaland Trust

148 River Street, Suite 110

Greenville, South Carolina 29601

(864) 979 9431

FrankHolleman@naturalandtrust.org

From: SCPCA [mailto:scpca-bounces@lists.fws.gov] **On Behalf Of** Reid, Rebekah
Sent: Wednesday, November 29, 2017 1:31 PM
To: scpca
Subject: [Scpca] Hexastylis naniflora in SC

Hi Everyone,

I am the species lead for Hexastylis naniflora and I work out of the FWS Asheville Field Office. I am seeking information about H. naniflora populations in SC. I have thorough information for Cowpens, Peters Creek Heritage Preserve, and Blalock Res; but, not much in the way of current information for other SC populations. Any information regarding the following would be very helpful:

- Who is working on H. naniflora in SC? And, what have you been up to?
- Does anyone have information on the following sites:

  Cherokee Creek near Cowpens (last Heritage update 2004)

  Spartanburg Water System Preserve (last Heritage update 2001)

  Claggett site in Raintree subdivision (last Heritage update 1991)

  UT to Spivey Creek (last Heritage update 1991)

  Peters Creek Heartleaf Site/Saranac Lake Subdivision (last Heritage update 1991)

- Other than sites I've mentioned, does anyone have information of other large and/or high ranked and/or preserved populations in SC?
- Anything else that can help me get up to speed on H. naniflora in SC?

Thank you and please feel free to email me directly.

Rebekah Reid

US Fish and Wildlife Service

Asheville Ecological Services Field Office

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The information contained in this communication from the sender is confidential.

From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Tuesday, February 6, 2018 2:56:15 PM
Importance: High

Thanks Rebekah! I think this is a solid list for us to move forward with current conditions (agree with taking away the population that is likely extirpated as you noted).....as for using these in the model...anything else you need to push forward with that effort?

Thanks,

Mike

On Tue, Feb 6, 2018 at 12:47 PM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> And, SC with location data updates...
>
> For Gateway, the best I could get for a location was directly behind school near stream. I've supplied coordinates that are behind the school and what appears to be near a stream.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
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> cell: 828-782-0090
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>
> On Tue, Feb 6, 2018 at 11:54 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > Mike,
> >
> > Check this out. I've added/updated info for NC in blue on the spreadsheet. I identified a few more "current" EOs. I've added them at the bottom so that you can incorporate them as you see fit (wasn't sure if they were intentionally not included).
> >
> > I did not have any changes for the SC sheet. I heard back from the preserve manager from SC. All she could find was one, 2006 report for one of the preserves so that doesn't really help. I'm am working on getting more specific location data for the Gateway Elementary and Boulder Creek.
> >
> > Let me know if you think the NC list looks good. Thanks.
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.

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On Mon, Feb 5, 2018 at 9:33 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Good morning!
>
> I've attached 2 spreadsheets to this email (for North and South Carolina). Within these files, I have created a separate sheet labeled "Populations Only", in which I took only the populations that have been detected within the last 10 years.....those populations then got a resilience ranking based on population size based off of the rules:
>
> >1,000 plants = very high
>
> 500-1,000 = high
>
> 100-500 = moderate
>
> <100 = low
>
> Rebekah....a few notes: for NC pops...I wasn't sure if a population was made up of multiple EOs, if the population number was an additional EO...for example, if the population was labeled 100.000, and it was composed of 100.20, 100.21, and 100.22, is there just 3 EOs (20, 21, and 22), or are there 4 EOs (20, 21, 22, and 100)....I went with there only being 3 EOs, but all the data is preserved on the new sheet. Also, for SC...there are 2 populations at the end that I don't have EOs for....no problem, except for being able to spatially delineate these for the model, etc....
>
> Have a look....hopefully I haven't made any big mistakes!
>
> Thanks,
>
> Mike
>
> On Mon, Feb 5, 2018 at 7:20 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > Thanks, Mike. That all sounds good. I like the population size break down and will be interested to see what our experts think. Once you have the spreadsheet for current populations settled, send it my way. I will need to go through the spatial data and get it to Mark for the model. SC was supposed to send me data for their preserves but I haven't received it yet. I've reminded them again. My hope is that the preserve data is more current than what is in the SC EO data and we can add a few more populations to our list of current populations for SC. We'll see...
> >
> > Thanks!
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
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On Fri, Feb 2, 2018 at 1:15 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hi Rebekah,
>
> Thanks for the info....very helpful. I'm using the spreadsheets with the data you provided to come up with a clean spreadsheet that shows only those populations for which the last observed/detection was no more than 10 years ago....this will change the narrative for number of populations, which is totally fine. Seems, as we discussed, the estimated number of populations came from data spread out over 20-30 years....we discussed not being too confident about the species actually being present, or especially abundance estimates that were older than 10 years...I will just be explicit about how the historical narrative on populations came from a wide time frame, but for the purposes of the SSA, we only focus on recent detections for the current condition of the species. As an example of what the estimates would be....for North Carolina, we go down from 90-something populations to 63....SC will be in the single digits. This is still a lot of populations, and the model will indicate there is a lot more available habitat that may or may not be occupied, but is suitable....will also point out that there are likely more populations at previous EO locations, but we did not want to include in the SSA analysis.
>
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To: Marshall, Michael E
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Tuesday, February 6, 2018 2:59:31 PM

I don't need anything else at this point. It's on me to go through the spatial data and get it to Mark. I'm on it!

We'll keep you posted.

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To: Marshall, Michael E
Cc: Endries, Mark; Becker, Drew N; Stephanie DeMay
Subject: Re: Additional Info on EO Ranks from NHP
Date: Wednesday, February 7, 2018 8:56:47 AM
Attachments: Current_Pops_NC1.zip
HENA NCNHP EO Data Summary_mem_01312018 RNRComments.xlsx
HENA SCNHP EO Data Summary_mem RNR Comments.xlsx
Current_Pops_SC1.zip

Attached are the SHPs and spreadsheets for our current populations in NC and SC.

NC Notes:

- There are four records not in the spatial data that will need to be added. These are EOs 319, 320, 321, and Rock Barn (all highlighted in red on the Population Only tab- lat/long is included in the "notes" column)

SC Notes

- There are two records not in the spatial data that will need to be added. These do not have EO numbers - Gateway Elementary and Boulder Creek (all highlighted in red on the Population Only tab- lat/long is included in the "notes" column)

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Not processed per agreement with Plaintiff/ Requester - 20180207 085647_Add Info on EO Ranks from_NHPCurrent_Pops_NC1.zip - This zip file has shape/ GIS files

tachment 20180207 085647_Re_ Additional Info on EO Ranks from NHP.zip (182383 Bytes) cannot be converted to PDF form

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
1	**23.000^**	A	Mill Creek Forest and Seep	1,733	>1000	2016	2015		Polk	N	NHP Comp Review and Mont Report.
2	**29.000^**	A	Island Creek Heath Bluff	50,541	>1000	2016	2016		Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
3	**31.000*^**	C?	NCDOT TIP: R-2824	1,062	>1000	2010	2001		Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
4	**32.000***	D	NCDOT TIP R-2824	457	100-500	2013	2011		Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
5	**44.000*^**	AB	Little Gunpowder Creek Rare Plant Site 1	617	500-1000	2015	2011		Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
6	**77.000***	CD	Little Gunpowder Creek Rare Plant Site 2	699	500-1000	2013	2007		Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
7	**87.000**	D	Catawba River: Lower Creek: Miller Creek	0	<100	2011	2011		Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
8	**93.000**	D	West Shelby Mesic Slope		100-500	2005	2005				Parent EO
	93.034	*D*	*West Shelby Mesic Slope*	*60*		*2005*	*2005*		*Clev*	*N*	
	93.035	*D*	*First Broad River: Brushy Creek*	*< 100*		*2016*	*2001*		*Clev*	*N*	*8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.*
9	**96.000**	A	Murrays Mill/Upper Balls Creek NA		>1000	2013	2010				Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
	*96.038^*	*CD*	*Catawba River: Deal Property*	*100 200*		*1996*	*1996*		*Cata*	*N*	
	*96.039^*	*D*	*Murrays Mill/Upper Balls Creek NA*	*< 50*		*2002*	*2002*		*Cata*	*?*	*Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)*
	96.184^*	*A*	*Murrays Mill/Upper Balls Creek NA*	*11,860*		*2013*	*2010*		*Cata*	*Y*	*NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)*
10	**98.000**	CD	Cat Square Heartleaf Forest		100-500	2012	2001				Parent EO
	98.002	*X*	*South Fork Catawba River, Indian Creek*	*0*		*1957*	*1980*		*Linc*	*N*	*Extirpated*
	98.003	*D*	*Cat Square Heartleaf Forest*	*160*		*2001*	*1995*		*Linc*	*N*	*presence noted in 2001, 160 plants counted in 1995*
	98.004	*CD*	*Cat Square Heartleaf Forest*	*200*		*2001*	*2001*		*Linc*	*N*	
	98.060	*D*	*NCDOT TIP: B-2119*	*20 50*		*2012*	*2001*		*Linc*	*N*	*EO is associated with NC DOT project B-2119*
11	**99.000**	A	Big Horse Creek Rare Plant Site	106,940	>1000	2015	2015				Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
	*99.009^*	*AB*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*Presence noted in 2012 - no count made, 500 estimate plants in 2005*
	*99.010^*	*A*	*Kudzu Farm Rare Plant Site*	*n/a*		*2014*	*2013*		*Ruth*	*N*	*33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.*
	*99.037^*	*C*	*Broad River: Hunter Road*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.*
	*99.052^*	*C*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2001*		*Ruth*	*N*	*200-300*
	*99.053^*	*D*	*Broad River: McKinney Bridge*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*<35*
	*99.055^*	*AB*	*Broad River: Richardson Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*included with EO 37. NHP Comp Review and Mont Report.*
	*99.061^*	*B*	*Broad River: UT at SR1115 and 1116*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*750-1000*
	*99.062^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*200-500. NHP Comp Review and Mont Report.*
	*99.063^*	*D*	*Broad River: Hayes Lake*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*20-25*
	*99.075^*	*A*	*Brice Rare Plant Site*	*n/a*		*2013*	*2013*		*Ruth*	*N*	*>7000. NHP Comp Review and Mont Report.*
	*99.076^*	*BC*	*Big Horse Rare Plant Site*	*n/a*		*2015*			*Ruth*	*Y*	*included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.*
	*99.079^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2012*	*2001*		*Ruth*	*N*	*200-300. NHP Comp Review and Mont Report.*
	*99.090^*	*D*	*Broad River: Richardson Creek*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*100-200*
	*99.121^*	*B*	*Broad River: Dills Creek*	*n/a*		*2004*	*2004*		*Ruth*	*N*	*300*
	*99.172^*	*D*	*Big Horse Rare Plant Site*	*n/a*		*2012*	*2012*		*Ruth*	*Y*	*50-100, Parris Heartleaf RHA voluntary agreement.*
	*99.181^*	*AB*	*Broad River: Dills Creek*	*n/a*		*2012*	*2001*		*Ruth*	*?*	*This subocccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.*
	*99.182^*	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.249	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.*
	99.250	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.251	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.267	*CD*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*150-250*
	99.268	*D*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*25-30*
	99.319	*E*	*Broad River: Big Horse Creek*	*unk*		*2012*	*2012*		*Ruth*		*observed but no count made.*
12	**100.000**	A	Broad River/Sandy Run NA		>1000	2012	2012				Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
	*100.014^*	*C?*	*Broad River/Sandy Run NA*	*177*		*2009*	*2001*		*Clev*	*N*	*EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000*
	*100.049^*	*A*	*Broad River/Sandy Run NA*	*1,118*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.*
	*100.050^*	*A*	*Broad River/Sandy Run NA*	*4,801*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.*
	*100.051^*	*A*	*Broad River/Sandy Run NA*	*2,363*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.*
	*100.073^*	*A*	*Broad River/Sandy Run NA*	*13,595*		*2012*	*2012*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.*
	*100.074^*	*B*	*Broad River/Sandy Run NA*	*722*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.*
	*100.149^*	*A*	*Broad River/Sandy Run NA*	*3,280*		*2012*	*2009*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.233^*	*A*	*Broad River/Sandy Run NA*	*3,383*		*2012*	*2012*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)*
	100.235	*CD*	*Broad River: Trib N of Broad River and SE of Lake Houser*	*100 200*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.236^*	*C*	*Broad River/Sandy Run NA*	*150 300*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.237^*	*E*	*Broad River/Sandy Run NA*	*> 200*		*2012*	*2001*		*Clev*	*N*	*Outside Broad River Tract*
	*100.238^*	*A*	*Broad River/Sandy Run NA*	*1,865*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.239^*	*D*	*Broad River/Sandy Run NA*	*165*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.240^*	*F*	*Broad River/Sandy Run NA*	*20*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - F*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes	
	100.241^	D	Broad River/Sandy Run NA	115		2012	2008		Clev	Y	Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)	
	100.246^	D	Broad River/Sandy Run NA	< 100		2001	2005		Clev	N	Outside Broad River Tract	
13	**125.000^**	A	New Hope Springhead Swamp		>1000	2016	2015		Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.	
14	**154.000^**	C	Facebook Site	2,576	>1000	2016	2015		Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.	
15	**157.000*^**	AB	First Broad River: Crooked Run Creek	330	100-500	2010	2005		Clev	N	DOT no longer monitors, too far from ROW.	
16	**158.000*^**	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	100-500	2016	2016		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.	
17	**176.000**	A	Davenport Road/Mountain View Rare Plant Site	6,750	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	176.167^	A	Davenport Road/Mountain View Rare Plant Site	n/a		2005	2015		Ruth	N	included with EO 107. NHP Comp Review and Mont Report.	
	176.168^	A	Davenport Road/Mountain View Rare Plant Site	n/a		2005	2005		Ruth	N	1113. NHP Comp Review and Mont Report.	
	176.169^	D	Davenport Road/Mountain View Rare Plant Site	n/a		2016	2016		Ruth	N	35. NHP Comp Review and Mont Report.	
	176.170^	C	Davenport Road/Mountain View Rare Plant Site	n/a		2016	2015		Ruth	N	191. NHP Comp Review and Mont Report.	
18	**177.000**	A	Broad River: Floyds Creek	12,687	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	177.016^	E	Broad River: Floyds Creek	n/a		2014	2012		Ruth	N	5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).	
	177.107^	B	Broad River: Floyds Creek	n/a		2008	2015		Ruth	N	241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remianing plants have no formal protection. (TB 9/21/2017)	
	177.122^	B?	Broad River: Floyds Creek	n/a		2008	2007		Ruth	N	123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).	
	177.163^	B	Broad River: Floyds Creek	n/a		2016	2015		Ruth	N	included with EO 107	
	177.164^	A	Broad River: Floyds Creek	n/a		2016	2005		Ruth	N	537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)	
	177.165^	C	Broad River: Floyds Creek	n/a		2005	2005		Ruth	N	included with EO 107	
	177.166^	CD	Broad River: Floyds Creek	n/a		2005			Ruth	N	included with EO 107	
19	**178.000**	A	Catawba River: Hoyle Crk-Micol Crk		>1000	2013	2016				Parent EO.	
	178.159*^	A	Catawba River: Hoyle Crk-Micol Crk	2182		2013	2005		Burk	N	Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.	
	178.160^	A	Catawba River: Hoyle Crk-Micol Crk	733		2013	2008		Burk	N	loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)	
	178.161^	A	Catawba River: Hoyle Crk-Micol Crk	2,754		2009			Burk	N	In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.	
	178.254^	D?	Catawba River: Hoyle Crk-Micol Crk	> 168		2010	2010		Burk	Y	Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).	
	178.255^	D	Catawba River: Hoyle Crk-Micol Crk	unk		2006	2006		Burk	Y	286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.	
	178.256^	C?	Catawba River: Hoyle Crk-Micol Crk	> 376		2010	2010		Burk	Y	Permanent conservation easement with Burke Cty and Public School System. Considerable number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).	
	178.280^	C	Catawba River: Hoyle Crk	126		2009	2009		Burk	Y	Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)	
	178.281^	E	Catawba River: Hoyle Crk-Micol Crk	unk		2009	2009		Burk	N	presence noted, no count made - outside of NCDOT ROW	
	178.282^	E	Catawba River: Hoyle Crk-Micol Crk	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.283	E	Catawba River: McGalliard Creek	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.284	E	Catawba River: McGalliard Creek	unk		2009	2009		Burk	N	included with 281? - presence noted, no count made - outside of NCDOT ROW	
	178.310	A	Megalliard Creek Slopes; Lake Rhodhiss	1,500 2,000		2016	2016		Burk	Y	Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.	NHP
20	**179.000**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		>1000	2012	2005				Parent EO	
*	179.030*	CD	NCDOT TIP R-2824	3,291		2013	2001		Cata	N	DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants total in the EO. Last report (2013)documented 4,719 plants.	
	179.162*	D	NCDOT TIP R-2825	21		2012	2005		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.	
21	**206.000**	D	Buffalo Creek: Ravine	90	<100	2007	2007		Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
22	**208.000^**	A	Buffalo Creek: Potts Creek	50 100	<100	2012	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
23	**214.000**	A	Buffalo Creek: Tributaries N and S of SR 2047		>1000	2012	2000				Parent EO	
	214.201^	D	Buffalo Creek: Tributary S	64		2000	2000		Clev	?	14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT	
	214.202^	A	Buffalo Creek: Ravine N	1,627		2000	2000		Clev	?	14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.	
	214.203^	B	Buffalo Creek: 3rd Tributary S	96		2007	2007		Clev	?	110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?	
	214.204^	A?	Buffalo Creek: S of SR 2128	?		2000	2000		Clev	?	3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT	
	214.205^	D	Buffalo Creek: N of SR 2128	171		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.	
	214.209^	BC	Buffalo Creek: Tributary E of County Fairgrounds	196		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.	
	214.212^	D	Buffalo Creek: Slope along Trib just N of SR 2047	97		2000	2000		Clev	N	In DOT study area for R-2707. No formal protection.	
	214.213^	CD	Buffalo Creek: Ravine just S of SR 2047	50 100		2012	2012		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT	
24	**216.000**	A	Buffalo Creek: Kings Mountain Res		>1000	2016	2000				Parent EO	
	216.028	B	Buffalo Creek Rare Plant Site	250		2016	2016		Clev	Y	This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)	
	216.196	D	Buffalo Creek: Friendship Chapel	56		2006	2006		Clev	N	In Dot study area. No formal protection.	
	216.197^	A	Buffalo Creek: Kings Mountain Res	2,067		2000	2000		Clev	?	NC DOT plans NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement	
	216.198^	B	Buffalo Creek: Kings Mountain Res	450		2007	2007		Clev	N	In Dot study area. No formal protection.	
	216.199^	B	Buffalo Creek: Kings Mountain Res	432		2007	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.	
	216.200^	D	Buffalo Creek: Kings Mountain Res	55		2000	2000		Clev	?	Pending NCDOT purchase for ROW protection (2009) Ask DOT	
25	**217.000**	B	Broad River: Brushy Creek		>1000	2016	2016				Parent EO	
	217.190	F	Broad River: Brushy Creek	0		2000	2006		Clev	N	No plants found.	
	217.191*	D	Broad River: Brushy Creek	264		2014	2000		Clev	Y	DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.	
	217.192	C	Broad River: Brushy Creek	494		2016	2016		Clev	Y	NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).	
	217.193	C	Broad River: Brushy Creek	271		2000	2000		Clev	?	NC DOT proposes to protect Site 9 through a conservation easement.	
	217.305	CD	Washburn Switch Business Park	70		2015	2015		Clev	N	Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
26	**227.000^**	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	>1000	2014	2014		Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?
27	**232.000**	A?	Buffalo Creek Rare Plant Site		500-1000	2012	2005				Parent EO.
	232.046	*A*	*Buffalo Creek Rare Plant Site*	*500*		*2005*	*2005*		*Clev*	*N*	*Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
	232.231	*D*	*Buffalo Creek Rare Plant Site*	*20*		*2012*	*2012*		*Clev*	*N*	*Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
28	**243.000**	AB	Jacob Fork West Corridor		>1000	2012	2007				Parent EO
	*243.012^*	*A*	*Jacob Fork West Corridor*	*> 1,000*		*1995*	*1995*		*Cata*	*?*	*Catawba County Wildlife Club RHA voluntary agreement.*
	*243.242^*	*D*	*Jacob Fork West Corridor*	*4*		*2005*	*2005*		*Cata*	*N*	
	*243.269^*	*B*	*Jacob Fork West Corridor*	*> 200*		*2007*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).*
	*243.270^*	*C?*	*Jacob Fork West Corridor*	*75 100*		*2012*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.*
29	**245.000**	AB	Floyds Creek Tributray Rare Plant Site		>1000	2010	2005				Parent EO
	245.091	*D*	*Broad River: Floyds Creek*	*30*		*2012*	*2003*		*Ruth*	*N*	
	245.113	*C*	*Floyds Creek Tributray Rare Plant Site*	*1,113*		*2010*	*2007*		*Ruth*	*N*	*7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?*
	245.175	*C*	*Floyds Creek Tributray Rare Plant Site*	*unk*		*2010*	*2007*		*Ruth*	*N*	*included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.*
30	**247.000**	A	New Bethel Rare Plant Site		>1000	2015	2015				Parent EO, NC DOT Mitigation Site
	247.013	*D*	*Sandy Mush Outcrop*	*< 100*		*2005*	*2005*		*Ruth*	*N*	
	247.056	*D*	*Broad River: Floyds Creek*	*< 150*		*2002*	*2001*		*Ruth*	*N*	
	*247.080^*	*D*	*Broad River: Floyds Creek*	*50*		*2012*	*2003*		*Ruth*	*N*	*No plant count made in 2012. 50 plants counted in 2003.*
***	*247.106*^*	*A*	*New Bethel Rare Plant Site*	*4,547*		*2015*	*2008*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).*
	*247.114^*	*D*	*Broad River Floyds Creek*	*0*		*2010*	*2003*		*Ruth*	*N*	*14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017*
	*247.115^*	*C*	*Broad River Floyds Creek*	*133*		*2005*	*2007*		*Ruth*	*N*	*Combine with EO 114*
	*247.173^*	*D*	*Broad River Floyds Creek*	*102*		*2005*	*2003*		*Ruth*	*N*	*inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??*
	*247.174^*	*D*	*Broad River Floyds Creek*	*84*		*2010*	*2003*		*Ruth*	*N*	*35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area*
***	*247.286*^*	*B*	*New Bethel Rare Plant Site*	*326*		*2015*	*2015*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.*
31	**248.000**	C	Jonas Road Rare Plant Site		100-500	2005	2005				Parent EO
	248.040	*C*	*Jonas Road Rare Plant Site*	*150 200*		*2005*	*2005*		*Ruth*	*N*	
	248.054	*D*	*Broad River: McKinney Creek*	*20 30*		*2014*	*2001*		*Ruth*	*N*	*20-30 plants noted for last count in 2005*
32	**252.000**	B	South Fork Catawba River, Henry Fork		100-500	2007	2005				Parent EO
	252.019	*D?*	*NCDOT TIP: R-0085*	*unk*		*2007*	*2007*		*Cata*	*?*	*EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.*
	252.020	*B*	*NCDOT TIP: R-0086*	*296*		*2007*	*2005*		*Cata*	*?*	*May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.*
33	**271.000**	C?	Pott Creek	5 6	<100	2012	2012		Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
34	**272.000**	BC	No Business Creek, Boyd Tract	75 150	100-500	2007	2007		Clev	N	
35	**274.000**	A?	Broad River/Sandy Run NA	100	100-500	2012	2008		Clev	Y	Broad River Greenway, Town of Boiling Springs
36	**275.000***	C	Buffalo Shoals Creek	257	100-500	2014	2014		Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
37	**276.000^**	A	Cliffside Steam Station	39,535	>1000	2016	2016		Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
38	**277.000**	D	Hickory: Martin Marietta Quarry	0	extripated	2011	2011		Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
39	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	?	<100	2009	2009		Linc	N	small
40	**287.000**	AB	Fox Knoll Farm	?	???	2016	2016		Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
41	**291.000**	C	Gunpowder Creek	82	???	2012	2010		Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
42	**292.000**	D	Forest City: Adj to Isothermal CC	150	100-500	2010	2010		Ruth	N	Owner, Ruthford County.
43	**293.000**	E	Killian Crossroads	unk	???	2010	2010		Cata	N	No plant count in EO data.
44	**295.000**	B	Hickory Area		100-500	2016				Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
	295.021	*A*	*Hickory Area, Catawba River: Geitner Park*	*> 300*		*2005*	*2005*		*Burk*	*?*	*Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?*
	295.294	*C*	*Hickory Area: Bud Geitner Park Transplant Site*	*153*		*2016*	*2014*		*Burk*	*?*	*Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.*
	295.313	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cata*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.*
	295.314	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cald*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).*
45	**296.000**	CD	UT of Kings Mountain Res	100	100-500	2012	2012		Gast	N	
46	**297.000**	CD	Beaverdam Crk at First Broad River	unk	???	2011	2011		Clev	N	No plant count in EO data.
47	**298.000**	C	Brushy Creek Headwaters	250 300	100-500	2014	2014		Clev	N	
48	**299.000**	D	Lincoln County, SR-1314	27	<100	2014	2014		Linc	N	In DOT study. No formal protection.
49	**300.000**	D	Levan Family Farm	50	<100	2013	2013		Ired	N	
50	**302.000**	A	Rhyne Conservation Preserve		>1000	2016	2014				Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
	302.047	*D*	*NCDOT Project R-617C, South Fork Catawba*	*5*		*2005*	*2005*		*Linc*	*N*	*In DOT ROW, no formal protection.*
	302.262	*A*	*Rhyne Conservation Preserve*	*19,873*		*2016*	*2016*		*Linc*	*Y*	*Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.*
51	**303.000**	AB	Smith Cliff/Henry Fork River	?	100-500	2015	2015		Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
52	**304.000**	B?	Simms Hill/Little River Uplands	200 250	100-500	2015	2015		Burk	Y	Conservation site managed by the Foothills Conservancy of NC
53	**306.000**	D	Fanjoy Road Site	75	<100	2015	2015		Ired	N	
54	**308.000**	C	Glade Creek, Alex County	2,194	>1000	2017	2017		Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
55	**309.000**	D?	South Mountains Pleasant Grove Uplands	?	<100	2016	2016		Burk	N	few
56	**311.000**	A	Collinsville (Hughes) Creek Slopes	200 750	100-500	2016	2016		Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
57	**312.000**	A	Richardson Creek trib above Toms Lake	?	>1000	2016	2016		Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
58	**316.000**	C	Northern Catawba County		???	2017	2017			?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
59	316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	500-1000	2006	2006		Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
	316.315	*D*	*NC-127/Cloninger Mill Road*	*60*		*2017*	*2017*		*Cata*	*?*	*Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A*
60	**317.000**	D	NCDOT TIP R-3603A	30	<100	2017	2017		Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
61	**318.000**	C	Burke County - Drowning Creek UT	356	100-500	2017	2017		Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
62	**320.000**	E	Hickory Creek - UT (Shelby High School)	15	<100	2016	2016		Clev		
63	**321.000**	B	Gunpowder Creek: South of Hudson	2475	>1000	2012	2012		Cald		NCDOT
	Add		*Rock Barn Solar Farm*	*821*					*Cata*	*Y*	*Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded.*	*NHP*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
			Total	340,470							

*	DOT monitors
^	In 2011 5-YR Review as Populations estimated to contain >1,000 plants.
	Pops/subpops >1,000 plants, current data.
green	Broad River Greenway

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
1	23.000	23.000	A	Mill Creek Forest and Seep	>1000	very high	Polk	2016	
2	29.000	29.000	A	Island Creek Heath Bluff	>1000	very high	Burk	2016	
3	31.000	31.000	C?	NCDOT TIP R-2824	>1000	very high	Cata	2015	
4	32.000	32.000	D	NCDOT TIP R-2824	100-500	moderate	Cata	2015	
5	44.000	44.000	AB	Little Gunpowder Creek Rare Plant Site 1	500-1000	high	Cald	2015	
6	59.000	59.000	C	Third Creek Rare Plant Site	100-500	moderate	Alex	2010	
7	77.000	77.000	CD	Little Gunpowder Creek Rare Plant Site 2	500-1000	high	Cald	2015	
8	93.000	34; 35	D	West Shelby Mesic Slope	100-500	moderate	Clev	2016	
9	96.000	38; 39; 184	A	Murrays Mill/Upper Balls Creek NA	>1000	very high	Cata	2013	
10	98.000	2; 3; 4; 60	CD	Cat Square Heartleaf Forest	100-500	moderate	Linc	2012	
11	99.000	9; 10; 37; 52; 53; 55; 61; 62; 63; 75; 76; 79; 90; 121; 172; 181; 182; 249; 250; 251; 267; 268; 319	A	Big Horse Creek Rare Plant Site	>1000	very high	Ruth	2015	[redacted]
12	100.000	14; 49; 51; 73; 74; 149; 233; 235; 236; 237; 238; 239; 240; 241; 246	A	Broad River/Sandy Run NA	>1000	very high	Clev	2012	Removed 50, duplicate of 233
13	125.000	125.000	A	New Hope Springhead Swamp	>1000	very high	Polk	2016	
14	154.000	154.000	C	Facebook Site	>1000	very high	Ruth	2016	
15	157.000	157.000	AB	First Broad River Crooked Run Creek	100-500	moderate	Clev	2010	
16	158.000	158.000	D	P Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork a	100-500	moderate	Cata	2016	
17	176.000	167; 168; 169; 170	A	Davenport Road/Mountain View Rare Plant Site	>1000	very high	Ruth	2016	
18	177.000	16; 107; 122; 163; 164; 165; 166	A	Broad River Floyds Creek	>1000	very high	Ruth	2016	
19	178.000	159; 160; 161; 254; 255; 256; 280; 281; 282; 283; 284; 310	A	Catawba River Hoyle Crk-Micol Crk	>1000	very high	Burk	2013	
20	179.000	30; 162	CD	South Fork Catawba R Clark Crk, Miller Br, Cata Mem Hos	>1000	very high	Cata	2013	
21	206.000	206.000	D	Buffalo Creek Ravine	<100	low	Clev	2007	
22	208.000	208.000	A	Buffalo Creek Potts Creek	<100	low	Clev	2012	
23	214.000	201; 202; 203; 204; 205; 209; 212; 213	A	Buffalo Creek Tributaries N and S of SR 2047	>1000	very high	Clev	2012	
24	216.000	28; 196; 197; 198; 199; 200	A	Buffalo Creek Kings Mountain Res	>1000	very high	Clev	2016	
25	217.000	190; 191; 192; 193; 305	B	Broad River Brushy Creek	>1000	very high	Clev	2016	
26	227.000	227.000	A	Peaked Top Rare Plant Site/Foothills Landfill	>1000	very high	Cald	2014	
27	232.000	46; 231	A?	Buffalo Creek Rare Plant Site	500-1000	high	Clev	2012	
28	243.000	12; 242; 269; 270	AB	Jacob Fork West Corridor	>1000	very high	Cata	2012	
29	245.000	91; 113; 175	AB	Floyds Creek Tributray Rare Plant Site	>1000	very high	Ruth	2012	
30	247.000	13; 56; 80; 106; 114; 115; 173; 174	A	New Bethel Rare Plant Site	>1000	very high	Ruth	2015	Removed 286, duplicate of 106
31	248.000	40; 54	C	Jonas Road Rare Plant Site	100-500	moderate	Ruth	2014	
32	252.000	19; 20	B	South Fork Catawba River, Henry Fork	100-500	moderate	Cata	2007	
33	271.000	271.000	C?	Pott Creek	<100	low	Cata	2012	
34	272.000	272.000	BC	No Business Creek, Boyd Tract	100-500	moderate	Clev	2007	
35	274.000	274.000	A?	Broad River/Sandy Run NA	100-500	moderate	Clev	2012	
36	275.000	275.000	C	Buffalo Shoals Creek	100-500	moderate	Ired	2014	
37	276.000	276.000	A	Cliffside Steam Station	>1000	very high	Clev/Ruth	2016	
38	277.000	277.000	D	Hickory Martin Marietta Quarry	extripated	extripated	Cata	2011	
39	279.000	279.000	D?	Northeast Lincolnton UT Walker Branch	<100	low	Linc	2009	
40	287.000	287.000	AB	Fox Knoll Farm	100-500	moderate	Polk	2016	found newer data - "several hundred clumps"
41	291.000	291.000	C	Gunpowder Creek	<100	low	Cald	2012	
42	292.000	292.000	D	Forest City Adj to Isothermal CC	100-500	moderate	Ruth	2010	
43	293.000	293.000	E	Killian Crossroads	???	unknown	Cata	2010	
44	295.000	21; 294; 313; 314	B	Hickory Area	100-500	moderate	Burk/Cata/Cald	2016	
45	296.000	296.000	CD	UT of Kings Mountain Res	100-500	moderate	Gast	2012	

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
46	297.000	297.000	CD	Beaverdam Crk at First Broad River	???	unknown	Clev	2011	
47	298.000	298.000	C	Brushy Creek Headwaters	100-500	moderate	Clev	2014	
48	299.000	299.000	D	Lincoln County, SR-1314	<100	low	Linc	2014	
49	300.000	300.000	D	Levan Family Farm	<100	low	Ired	2013	
50	302.000	47; 262	A	Rhyne Conservation Preserve	>1000	very high	Linc	2016	
51	303.000	303.000	AB	Smith Cliff/Henry Fork River	100-500	moderate	Burk	2015	
52	304.000	304.000	B?	Simms Hill/Little River Uplands	100-500	moderate	Burk	2015	
53	306.000	306.000	D	Fanjoy Road Site	<100	low	Ired	2015	
54	308.000	308.000	C	Glade Creek, Alex County	>1000	very high	Alex	2017	
55	309.000	309.000	D?	South Mountains Pleasant Grove Uplands	<100	low	Burk	2016	
56	311.000	311.000	A	Collinsville (Hughes) Creek Slopes	100-500	moderate	Polk	2016	
57	312.000	312.000	A	Richardson Creek trib above Toms Lake	>1000	very high	Ruth	2016	
58	316.000	273; 315	C	Northern Catawba County	500-1000	high	Cata	2017	
59	317.000	317.000	D	NCDOT TIP R-3603A	<100	low	Alex	2017	
60	318.000	318.000	C	Burke County - Drowning Creek UT	100-500	moderate	Burk	2017	
61	320.000	320.000	E	Hickory Creek - UT (Shelby High School)	<100	low	Clev	2016	Not processed per agreem
62	321.000	321.000	B	Gunpowder Creek South of Hudson	>1000	very high	Cald	2012	Not processed per agreem
63				Rock Barn Solar Farm	500-1000	high	Cata	2010-2011	I don't think NHP knows about this one. Location Not processed per agreement with

**87 and 277 removed due to extirpation

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
1	3	3852	H	Beaverdam Creek/3 mi east of Travelers Rest				1964	2009	GREE			
1	5	7689	CD	Sagittaria Hydrology Site		150	200	1991	2008	GREE			Doug Rayner (Wofford College) - emailed 12/12/17
1	6	1160	CD	Junction of SSR173 and SSR 262		75	100	1991	2008	GREE			
1	8	4875	BD	UT Beaverdam Creek/S-903		150		1991	2008	GREE			
1	15	1713	AC	DNR Bunched Arrowhead Preserve		1		1991	2010	GREE	Y	DNR Bunched Arrowhead Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
1	52	730	AC	DNR Belvue Springs Heritage Preserve		?		1999	2008	GREE		"numerous clumps", DNR Belvue Springs HP. Is this the same as the Bunched Arrowhead Preserve?	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
2	10	7931	H?	UT Enoree River				1985	2010	GREE			
2	51	6287	BC	DNR Clear Creek Heritage Preserve		1		1999	2008	GREE	Y	DNR Clear Creek Heritage Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	22	1649	BD	UT Tyger River/south of S-75		50	100	1991	2008	SPAR		same as 9058	
3	23	9058	BD	UT Tyger River/south of S-75						SPAR		same as 1649 (duplicate plant count)	
4	2	7399	BD	1.5 mi south of Gowensville/SC14		150		1991	2008	GREE			
4	4	3101	CD	Fairview Farms		75		1991	2008	SPAR			
4	24	6179	CD	UT Motlow Creek		50	100	1991	2008	SPAR			
4	32	5677	BD	Page Creek at Landrum HS		155		1991	2008	SPAR			
4	33	4879	BD	NW of Junction SC11 and SC14		168		1991	2008	GREE			
4	36	1993	BD	Clear Branch Creek		303		1991	2008	SPAR			
4	38	3367	BD	UT Spivey Creek	+	1000		1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
4	39	8503	CD	1 mi SW of US176 and S-209 in Ingleside		66		1991	2008	SPAR			
4	40	8504	BD	UT Clear Branch Creek		221		1991	2008	SPAR			
4	41	1460	CD	SC 14 and High Farm Road		50	100	1991	2008	SPAR			
4	42	8856	BD	1/4 mi E of SC14 and South Pacolet River		189		1991	2008	GREE/SPAR			
4	49	1450	AB	UT Page Creek/Campbell Ave		750	800	2001	2008	SPAR	?	2001: "new Spartanburg Water Systems preserve"	Spartanburg Water System (who?)
4	50	1449	BD	Page Creek Sewer Line		400	550	2001	2008	SPAR	?	2001: "an easment is being sought"	Spartanburg Water System (who?)
4	54	2719	BD	Headwater UT Wolfe Creek		400		2001	2008	SPAR	?	"On City of Landrum Property"	
4	59	13002	BD	Beaver Dam Creek/MetCalf		250	500	2005	2011	SPAR			
5	30	6009	BD	Greene Creek		100		1994	2008	SPAR			
6	25	878	CD	Lake William Bowen		10	20	1991	2008	SPAR			
7	37	6749	CD	Bear Creek		56		1991	2008	SPAR			
8	35	108	BD	Alverson Grove Church		74		1991	2008	SPAR			
9	34	7788	BD	Arrowood Branch		13		1991	2008	SPAR			
10	31	1730	H?	Blalock Res Site P				1984	2009	SPAR		NCNHP includes EO 7 and 31 as Blalock sites, 5-YR Review includes EO 7 and 29. 2km rule groups EO 7 and 29 together with EO 31 separate (>2km) but close by.	Spartanburg Water System (who?)
11	7	7013	BD	Taylor Blalock Res		3505		2016	2008	SPAR		James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
11	29	6010	H?	Blalock Res Site C				1984	2009	SPAR			Spartanburg Water System (who?)
12	20	3552	BD	Camp Mary Elizabeth		150		1991	2008	SPAR	?	Girl Scouts of America	Fred Parrish
12	21	1984	BD	Beaverdam Creek/Claggett Raintree		700		1991	2008	SPAR	?	SC Nature Conservancy	Kristen Austin (TNC SC) emailed 12/12/17, or Fred Parrish
12	55	2486	CD	UT North Tyger River/Woodridge		50		2001	2008	SPAR			
13	9	7930	CD	Chinquapin Creek		?		1991	2008	SPAR		"two small colonies"	Fred Parrish
13	13	6456	BD	UT Cleveland Park Lake		50		1991	2008	SPAR	?	City of Spartanburg - Cleveland Park	Fred Parrish
13	19	3551	BC	USC-Upstate		25	50	1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
13	46	2369	CD	Shoally Creek		25		1998	2008	SPAR			
13	53	8981	BC	USC-Upstate		250	300	2000	2008	SPAR		Is this a part of other USC population?	Doug Rayner (Wofford College) - emailed 12/12/17
13	56	6523	BD	Lawsons Fork Creek on US221		200	250	2001	2008	SPAR			
14	11	6097	AB	DNR Peters Creek Heritage Preserve		3306		2016	2008	SPAR	Y	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	14	2791	AB	DNR Peters Creek Heritage Preserve		5000		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve, Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	26	5183	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	27	4476	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
14	28	8667	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	47	6953	U	Cannon Campground Road and Kelly Road				1998	2008	SPAR			
14	48	2769	U	Kelly Road				1998	2008	SPAR			
14	57	4312	BD	Lincoln Memorial Cem/Cannon Campground Rd		450	600	1997	2012	SPAR			
15	16	916	BC	Cowpens NBF - Site 1		2823		2016	2008	CHER		US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09 28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP
15	17	5173	BC	Cowpens NBF - Site 3	+	130		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09 28.17)	Park manager (who?) or NCNHP
15	18	6825	BC	Cowpens NBF - Site 2		50		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09 28.17)	Park manager (who?) or NCNHP
16	1	235	BD	Cherokee Creek/SC 11		200		1991	2008	CHER			
16	44	3124	H?	SW side of SC 11 - 5.45 mi NW of I-85				1984	2009	CHER			
16	45	5554	U	Lenzer Circle				1989	2008	CHER			
16	60	13003	BD	Cherokee Creek/Bonner and Robin School Roads		1500		2004	2011	CHER			
17	43	7286	CD	McKee Drive		20		1991	2008	CHER			
18	12	1322	H?	Horse Creek				1986	2012	CHER			
				Boulder Creek Subdivision - Jordan Road		15	20	2006		GREE	Y	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
				Gateway Elementary School						GREE		"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

Populations	EO Number	EO Rank	Site Name	Total Estimated Plants	Resilience Category	Last Observed	County	Notes	RNR Notes
1	7; 29	BD	Taylor Blalock Res	>1000	Very High	2016	SPAR	James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	
2	11; 14; 26; 27; 28; 47; 48; 57	AB	DNR Peters Creek Heritage Preserve	>1000	Very High	2016	SPAR	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	
3	16; 17; 18	BC	Cowpens NBF - Site 1	>1000	Very High	2016	CHER	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	
4			Boulder Creek Subdivision - Jordan Road	<100	Low	2016	GREE	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17). Last seen in 2016 per F. Hollemon (02/06/18).	Not in EO data. Two locations [redacted] and [redacted] Coordinates located from paper maps.
5			Gateway Elementary School	<100	Low	2017	GREE	"number of clumps around trees near streams" (F. Hollemon 12/12/17). Last seen in 2017, not a full survey just noticed plants likely additional plants in wooded area. Plants located directly behind school per F. Hollemon (02/06/18)	Not in EO data. "Directly behind school" is approximately [redacted]

Not processed per agreement with Plaintiff/Requester -
20180207 085647_Add Info on EO Ranks
from_NHPCurrent_Current_Pops_SC1.zip

achment 20180207 085647_Re_ Additional Info on EO Ranks from NHP (1).zip (8237 Bytes) cannot be converted to PDF form

From: Amoroso, Jame
To: Reid, Rebekah N
Cc: Mason, Suzanne; Robinson, Laura
Subject: RE: [External] EO Rank vs Last Obs Date
Date: Wednesday, February 7, 2018 3:21:19 PM
Attachments: image001.png
Copy of HENA EO Rank Date vs Last Obs Date.xlsx
Importance: High

Hi Rebekah,

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59 of them needed review and updating which has been done.
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Thank you for asking about this, and helping us improve our database. Let me know if you have more questions.

Jame

Jame Amoroso
Conservation Information Specialist

121 W Jones St MSC 1651 Raleigh, NC 27699-1651
919 707 8621 *office*
Jame.Amoroso@ncdcr.gov

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From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, February 2, 2018 12:24 PM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Subject: [External] EO Rank vs Last Obs Date

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attachment to report.spam@nc.gov.

Jame,

Attached is spreadsheet that show HENA EO records with a discrepancy between EO rank date and last observed date. There are two scenarios represented in the table:

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- Last observe date older than EO rank date

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- In the case of last observe date older than EO rank date - We can assume the EO rank date is accurate and maybe desk updated?

Thank you and have a great weekend!

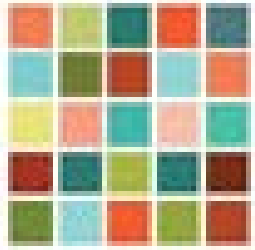
Rebekah Reid

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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

EO Number	EO Number2	EO Rank	Site Name	Last Observed	Rank Date	comments
98.002	2	X	South Fork Catawba River, Indian Creek	1957	1980	Site reported destroyed in 1980, but attempts were made in 1981 and 2001 to relocate this collection site.
98.003	3	D	Cat Square Heartleaf Forest	2001	1995	rank date based on last count, more recent obs was presence.
101.006	6	X	Camp Creek Bluff North	1981	1995	survey date when reported extirpated.
8.000	**8**	D	First Broad River: Knob Creek	2002	2000	updated
99.010	10	A	Kudzu Farm Rare Plant Site	2014	2013	updated
11.000	**11**	X	South Fork Catawba River: Henry Fork, Pleasant Grove	1981	1995	survey date when reported extirpated.
100.014	14	C?	Broad River/Sandy Run NA	2009	2001	rank date based on last count, more recent obs was presence.
177.016	16	E	Broad River: Floyds Creek	2014	2012	updated
252.020	20	B	NCDOT TIP: R-0086	2007	2005	updated
23.000	**23**	A	Mill Creek Forest and Seep	2016	2015	updated
179.030	30	CD	NCDOT TIP R-2824	2013	2001	updated
31.000	**31**	C?	NCDOT TIP: R-2824	2010	2001	updated
32.000	**32**	D	NCDOT TIP R-2824	2013	2011	updated
93.035	35	D	First Broad River: Brushy Creek	2016	2001	rank date based on last count, more recent obs was incomplete count
99.037	37	C	Broad River: Hunter Road	2005	2015	survey date updated
44.000	**44**	AB	Little Gunpowder Creek Rare Plant Site 1	2015	2011	rank date based on last count, more recent obs was presence
100.049	49	A	Broad River/Sandy Run NA	2012	2008	updated; EO rank based on the 2005 EO rank specifications for this species.
100.050	50	A	Broad River/Sandy Run NA	2012	2008	updated
100.051	51	A	Broad River/Sandy Run NA	2012	2008	updated
99.052	52	C	Hensons Creek Natural Area	2005	2001	updated
248.054	54	D	Broad River: McKinney Creek	2014	2001	updated
99.055	55	AB	Broad River: Richardson Creek	2016	2015	updated
247.056	56	D	Broad River: Floyds Creek	2002	2001	updated
98.060	60	D	NCDOT TIP: B-2119	2012	2001	updated
100.074	74	B	Broad River/Sandy Run NA	2012	2008	updated
99.076	76	BC	Big Horse Rare Plant Site	2015	2013	already updated?
77.000	**77**	CD	Little Gunpowder Creek Rare Plant Site 2	2013	2007	updated
99.079	79	C	Broad River: Richardson Creek	2012	2001	rank date based on last count, more recent obs was presence.
247.080	80	D	Broad River: Floyds Creek	2012	2003	rank date based on last count, more recent obs was presence.
245.091	91	D	Broad River: Floyds Creek	2012	2003	updated
96.000	**96**	A	Murrays Mill/Upper Balls Creek NA	2013	2010	parent EO; updated
97.000	**97**	C	Sandy Run/Cliffside NA	2002	2002	same, no updates needed
98.000	**98**	CD	Cat Square Heartleaf Forest	2012	2001	parent EO; updated
247.106	106	A	New Bethel Rare Plant Site	2015	2008	updated
177.107	107	B	Broad River: Floyds Creek	2008	2015	rank date based on last count, most recent survey confirmed presence
245.113	113	C	Floyds Creek Tributray Rare Plant Site	2010	2007	rank date based on last count, most recent survey confirmed presence
247.114	114	D	Broad River Floyds Creek	2010	2003	rank date based on last count, most recent survey confirmed presence
247.115	115	C	Broad River Floyds Creek	2005	2007	updated
177.122	122	B?	Broad River: Floyds Creek	2008	2007	updated
125.000	**125**	A	New Hope Springhead Swamp	2016	2015	updated
100.149	146	A	Broad River/Sandy Run NA	2012	2009	updated
154.000	**154**	C	Facebook Site	2016	2015	updated
157.000	**157**	AB	First Broad River: Crooked Run Creek	2010	2005	updated
178.159	159	A	Catawba River: Hoyle Crk-Micol Crk	2013	2005	rank date based on last count, more recent obs was presence
178.160	160	A	Catawba River: Hoyle Crk-Micol Crk	2013	2008	rank date based on last count, more recent obs was presence
178.161	161	A	Catawba River: Hoyle Crk-Micol Crk	2009	2008	rank date based on last count, more recent obs was presence
179.162	162	D	NCDOT TIP R-2825	2012	2005	updated
177.163	163	B	Broad River: Floyds Creek	2016	2015	rank date based on last count, more recent obs was presence
177.164	164	A	Broad River: Floyds Creek	2016	2005	updated
177.165	165	C	Broad River: Floyds Creek	2005	2005	same, no updates needed
176.167	167	A	Davenport Road/Mountain View Rare Plant Site	2005	2015	rank date based on last count, more recent obs was presence
176.168	168	A	Davenport Road/Mountain View Rare Plant Site	2005	2005	same, no updates needed
176.170	170	C	Davenport Road/Mountain View Rare Plant Site	2016	2015	updated
247.173	173	D	Broad River Floyds Creek	2005	2003	updated
247.174	174	D	Broad River Floyds Creek	2010	2003	rank date based on last count, most recent survey confirmed presence
245.175	175	C	Floyds Creek Tributray Rare Plant Site	2010	2007	rank date based on last count, most recent survey confirmed presence
178.000	**178**	A	Catawba River: Hoyle Crk-Micol Crk	2013	2016	parent EO; updated
179.000	**179**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	2012	2005	parent EO; updated
101.180	180	D	Camp Creek Bluff	1995	1981	updated
99.181	181	AB	Broad River: Dills Creek	2012	2001	rank date based on last count, most recent survey confirmed presence
96.184	184	A	Murrays Mill/Upper Balls Creek NA	2013	2010	updated
217.190	190	F	Broad River: Brushy Creek	2000	2006	rank based on last survey date
217.191	191	D	Broad River: Brushy Creek	2014	2000	rank date based on last count, most recent survey confirmed presence
208.000	**208**	A	Buffalo Creek: Potts Creek	2012	2007	updated

EO Number	EO Number2	EO Rank	Site Name	Last Observed	Rank Date	comments
214.000	**214**	A	Buffalo Creek: Tributaries N and S of SR 2047	2012	2000	parent EO, updated
216.000	**216**	A	Buffalo Creek: Kings Mountain Res	2016	2000	parent EO, updated
226.225	225	A	Lake James, Linville Dam	2005	2006	updated
229.000	**229**	C?	Hogpen Branch Transplant Site	2005	2007	rank date based on last count, most recent survey confirmed presence, updated
232.000	**232**	A?	Buffalo Creek Rare Plant Site	2012	2005	Rank of the parent EO based on the larger suboccurrence that was last counted in 2005 (Amoroso 2018).
100.235	235	CD	Broad River: Trib N of Broad River and SE of Lake Houser	2001	2005	updated
100.236	236	C	Broad River/Sandy Run NA	2001	2005	updated
100.237	237	E	Broad River/Sandy Run NA	2012	2001	updated
100.238	238	A	Broad River/Sandy Run NA	2012	2008	updated
100.239	239	D	Broad River/Sandy Run NA	2012	2008	updated
100.240	240	F	Broad River/Sandy Run NA	2012	2008	updated
100.241	241	D	Broad River/Sandy Run NA	2012	2008	updated
243.000	**243**	AB	Jacob Fork West Corridor	2012	2007	rank date based on last count, most recent survey confirmed presence
245.000	**245**	AB	Floyds Creek Tributray Rare Plant Site	2010	2005	updated
100.246	246	D	Broad River/Sandy Run NA	2001	2005	updated
252.000	**252**	B	South Fork Catawba River, Henry Fork	2007	2005	updated
99.267	267	CD	Kudzu Farm	2006	2008	updated
99.268	268	D	Kudzu Farm	2006	2008	updated
243.269	269	B	Jacob Fork West Corridor	2007	2008	updated
243.270	270	C?	Jacob Fork West Corridor	2012	2008	rank date based on last count, most recent survey confirmed presence
274.000	**274**	A?	Broad River/Sandy Run NA	2012	2008	rank date based on last count, most recent survey was partial
291.000	**291**	C	Gunpowder Creek	2012	2010	rank date based on last count, most recent survey was partial
295.294	294	C	Hickory Area: Bud Geitner Park Transplant Site	2016	2014	updated
295.000	**295**	B	Hickory Area	2016	2011	Parent EO, updated
302.000	**302**	A	Rhyne Conservation Preserve	2016	2014	parent EO, updated

From: Reid, Rebekah N
To: Amoroso, Jame
Cc: Mason, Suzanne; Robinson, Laura
Subject: Re: [External] EO Rank vs Last Obs Date
Date: Thursday, February 8, 2018 7:26:19 AM
Attachments: image001.png
Importance: High

Jame,

Thank you for looking at this for us. This is a wonderful update!

We've been working on a species distribution model so I've been going through the data with a fine tooth comb. I noticed two duplicate/overlaps in the spatial data - EOs 50 and 233, and EOs 106 and 286. We've reconciled these for the purpose of our model but I thought you would like to know for future updates.

Thanks again!

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
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phone: 828-258-3939 x238
cell: 828-782-0090

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On Wed, Feb 7, 2018 at 3:21 PM, Amoroso, Jame <jame.amoroso@ncdcr.gov> wrote:

> Hi Rebekah,
>
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Thank you for asking about this, and helping us improve our database. Let me know if you have more questions.

Jame

Jame Amoroso

Conservation Information Specialist

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919 707 8621 *office*

Jame.Amoroso@ncdcr.gov

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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, February 2, 2018 12:24 PM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Subject: [External] EO Rank vs Last Obs Date

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Thank you and have a great weekend!

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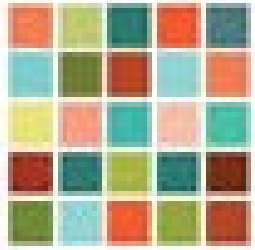
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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From:	Reid, Rebekah N
To:	Marshall, Michael E; Becker, Drew N; Stephanie DeMay
Subject:	Fwd: [External] EO Rank vs Last Obs Date
Date:	Thursday, February 8, 2018 7:28:05 AM
Attachments:	image001.png Copy of HENA EO Rank Date vs Last Obs Date.xlsx
Importance:	High

Mike,

Attached is a spreadsheet of updated EO ranks. Let me know how you'd like to use this data and I can incorporate it into the spreadsheet.

Thanks.

Rebekah Reid

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---------- Forwarded message ----------
From: **Amoroso, Jame** <jame.amoroso@ncdcr.gov>
Date: Wed, Feb 7, 2018 at 3:21 PM
Subject: RE: [External] EO Rank vs Last Obs Date
To: "Reid, Rebekah" <rebekah_reid@fws.gov>
Cc: "Mason, Suzanne" <suzanne.mason@ncdcr.gov>, "Robinson, Laura" <Laura.Robinson@ncdcr.gov>

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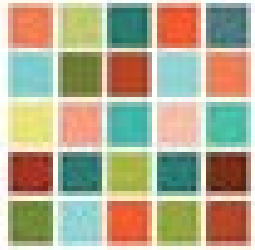
phone: 828-258-3939 x238

cell: 828-782-0090

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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

EO Number	EO Number2	EO Rank	Site Name	Last Observed	Rank Date	comments
98.002	2	X	South Fork Catawba River, Indian Creek	1957	1980	Site reported destroyed in 1980, but attempts were made in 1981 and 2001 to relocate this collection site.
98.003	3	D	Cat Square Heartleaf Forest	2001	1995	rank date based on last count, more recent obs was presence.
101.006	6	X	Camp Creek Bluff North	1981	1995	survey date when reported extirpated.
8.000	**8**	D	First Broad River: Knob Creek	2002	2000	updated
99.010	10	A	Kudzu Farm Rare Plant Site	2014	2013	updated
11.000	**11**	X	South Fork Catawba River: Henry Fork, Pleasant Grove	1981	1995	survey date when reported extirpated.
100.014	14	C?	Broad River/Sandy Run NA	2009	2001	rank date based on last count, more recent obs was presence.
177.016	16	E	Broad River: Floyds Creek	2014	2012	updated
252.020	20	B	NCDOT TIP: R-0086	2007	2005	updated
23.000	**23**	A	Mill Creek Forest and Seep	2016	2015	updated
179.030	30	CD	NCDOT TIP R-2824	2013	2001	updated
31.000	**31**	C?	NCDOT TIP: R-2824	2010	2001	updated
32.000	**32**	D	NCDOT TIP R-2824	2013	2011	updated
93.035	35	D	First Broad River: Brushy Creek	2016	2001	rank date based on last count, more recent obs was incomplete count
99.037	37	C	Broad River: Hunter Road	2005	2015	survey date updated
44.000	**44**	AB	Little Gunpowder Creek Rare Plant Site 1	2015	2011	rank date based on last count, more recent obs was presence
100.049	49	A	Broad River/Sandy Run NA	2012	2008	updated; EO rank based on the 2005 EO rank specifications for this species.
100.050	50	A	Broad River/Sandy Run NA	2012	2008	updated
100.051	51	A	Broad River/Sandy Run NA	2012	2008	updated
99.052	52	C	Hensons Creek Natural Area	2005	2001	updated
248.054	54	D	Broad River: McKinney Creek	2014	2001	updated
99.055	55	AB	Broad River: Richardson Creek	2016	2015	updated
247.056	56	D	Broad River: Floyds Creek	2002	2001	updated
98.060	60	D	NCDOT TIP: B-2119	2012	2001	updated
100.074	74	B	Broad River/Sandy Run NA	2012	2008	updated
99.076	76	BC	Big Horse Rare Plant Site	2015	2013	already updated?
77.000	**77**	CD	Little Gunpowder Creek Rare Plant Site 2	2013	2007	updated
99.079	79	C	Broad River: Richardson Creek	2012	2001	rank date based on last count, more recent obs was presence.
247.080	80	D	Broad River: Floyds Creek	2012	2003	rank date based on last count, more recent obs was presence.
245.091	91	D	Broad River: Floyds Creek	2012	2003	updated
96.000	**96**	A	Murrays Mill/Upper Balls Creek NA	2013	2010	parent EO; updated
97.000	**97**	C	Sandy Run/Cliffside NA	2002	2002	same, no updates needed
98.000	**98**	CD	Cat Square Heartleaf Forest	2012	2001	parent EO; updated
247.106	106	A	New Bethel Rare Plant Site	2015	2008	updated
177.107	107	B	Broad River: Floyds Creek	2008	2015	rank date based on last count, most recent survey confirmed presence
245.113	113	C	Floyds Creek Tributray Rare Plant Site	2010	2007	rank date based on last count, most recent survey confirmed presence
247.114	114	D	Broad River Floyds Creek	2010	2003	rank date based on last count, most recent survey confirmed presence
247.115	115	C	Broad River Floyds Creek	2005	2007	updated
177.122	122	B?	Broad River: Floyds Creek	2008	2007	updated
125.000	**125**	A	New Hope Springhead Swamp	2016	2015	updated
100.149	146	A	Broad River/Sandy Run NA	2012	2009	updated
154.000	**154**	C	Facebook Site	2016	2015	updated
157.000	**157**	AB	First Broad River: Crooked Run Creek	2010	2005	updated
178.159	159	A	Catawba River: Hoyle Crk-Micol Crk	2013	2005	rank date based on last count, more recent obs was presence
178.160	160	A	Catawba River: Hoyle Crk-Micol Crk	2013	2008	rank date based on last count, more recent obs was presence
178.161	161	A	Catawba River: Hoyle Crk-Micol Crk	2009	2008	rank date based on last count, more recent obs was presence
179.162	162	D	NCDOT TIP R-2825	2012	2005	updated
177.163	163	B	Broad River: Floyds Creek	2016	2015	rank date based on last count, more recent obs was presence
177.164	164	A	Broad River: Floyds Creek	2016	2005	updated
177.165	165	C	Broad River: Floyds Creek	2005	2005	same, no updates needed
176.167	167	A	Davenport Road/Mountain View Rare Plant Site	2005	2015	rank date based on last count, more recent obs was presence
176.168	168	A	Davenport Road/Mountain View Rare Plant Site	2005	2005	same, no updates needed
176.170	170	C	Davenport Road/Mountain View Rare Plant Site	2016	2015	updated
247.173	173	D	Broad River Floyds Creek	2005	2003	updated
247.174	174	D	Broad River Floyds Creek	2010	2003	rank date based on last count, most recent survey confirmed presence
245.175	175	C	Floyds Creek Tributray Rare Plant Site	2010	2007	rank date based on last count, most recent survey confirmed presence
178.000	**178**	A	Catawba River: Hoyle Crk-Micol Crk	2013	2016	parent EO; updated
179.000	**179**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	2012	2005	parent EO; updated
101.180	180	D	Camp Creek Bluff	1995	1981	updated
99.181	181	AB	Broad River: Dills Creek	2012	2001	rank date based on last count, most recent survey confirmed presence
96.184	184	A	Murrays Mill/Upper Balls Creek NA	2013	2010	updated
217.190	190	F	Broad River: Brushy Creek	2000	2006	rank based on last survey date
217.191	191	D	Broad River: Brushy Creek	2014	2000	rank date based on last count, most recent survey confirmed presence
208.000	**208**	A	Buffalo Creek: Potts Creek	2012	2007	updated

214.000	**214**	A	Buffalo Creek: Tributaries N and S of SR 2047	2012	2000	parent EO, updated
216.000	**216**	A	Buffalo Creek: Kings Mountain Res	2016	2000	parent EO, updated
226.225	225	A	Lake James, Linville Dam	2005	2006	updated
229.000	**229**	C?	Hogpen Branch Transplant Site	2005	2007	rank date based on last count, most recent survey confirmed presence, updated
232.000	**232**	A?	Buffalo Creek Rare Plant Site	2012	2005	Rank of the parent EO based on the larger suboccurrence that was last counted in 2005 (Amoroso 2018).
100.235	235	CD	Broad River: Trib N of Broad River and SE of Lake Houser	2001	2005	updated
100.236	236	C	Broad River/Sandy Run NA	2001	2005	updated
100.237	237	E	Broad River/Sandy Run NA	2012	2001	updated
100.238	238	A	Broad River/Sandy Run NA	2012	2008	updated
100.239	239	D	Broad River/Sandy Run NA	2012	2008	updated
100.240	240	F	Broad River/Sandy Run NA	2012	2008	updated
100.241	241	D	Broad River/Sandy Run NA	2012	2008	updated
243.000	**243**	AB	Jacob Fork West Corridor	2012	2007	rank date based on last count, most recent survey confirmed presence
245.000	**245**	AB	Floyds Creek Tributray Rare Plant Site	2010	2005	updated
100.246	246	D	Broad River/Sandy Run NA	2001	2005	updated
252.000	**252**	B	South Fork Catawba River, Henry Fork	2007	2005	updated
99.267	267	CD	Kudzu Farm	2006	2008	updated
99.268	268	D	Kudzu Farm	2006	2008	updated
243.269	269	B	Jacob Fork West Corridor	2007	2008	updated
243.270	270	C?	Jacob Fork West Corridor	2012	2008	rank date based on last count, most recent survey confirmed presence
274.000	**274**	A?	Broad River/Sandy Run NA	2012	2008	rank date based on last count, most recent survey was partial
291.000	**291**	C	Gunpowder Creek	2012	2010	rank date based on last count, most recent survey was partial
295.294	294	C	Hickory Area: Bud Geitner Park Transplant Site	2016	2014	updated
295.000	**295**	B	Hickory Area	2016	2011	Parent EO, updated
302.000	**302**	A	Rhyne Conservation Preserve	2016	2014	parent EO, updated

From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Becker, Drew N; Stephanie DeMay
Subject: Re: [External] EO Rank vs Last Obs Date
Date: Thursday, February 8, 2018 9:37:33 AM
Attachments: image001.png
Importance: High

Awesome, thanks! I'm not exactly sure how the EO ranks will end up playing into the SSA, except that they help determine our population size bins for purposes of resilience, and inform our foreseeable future for projections (e.g. 20-30 years).....I might also compare our resilience ranks based on pop size to the EO ranks, and if there is a discrepancy, dive deeper in to see if there is something underlying that discrepancy.....finally, the EO ranks might help in any endeavor to model habitat for the species....I'm thinking along the lines of habitat quality....for example, what are the habitat metrics that result in excellent viability ranks for the species, or something along those lines.

That was just a quick brain dump....hope it makes some amount of sense.

Thanks,

Mike

On Thu, Feb 8, 2018 at 7:28 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Mike,
>
> Attached is a spreadsheet of updated EO ranks. Let me know how you'd like to use this data and I can incorporate it into the spreadsheet.
>
> Thanks.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> ---------- Forwarded message ----------
> From: **Amoroso, Jame** <jame.amoroso@ncdcr.gov>
> Date: Wed, Feb 7, 2018 at 3:21 PM
> Subject: RE: [External] EO Rank vs Last Obs Date
> To: "Reid, Rebekah" <rebekah_reid@fws.gov>
> Cc: "Mason, Suzanne" <suzanne.mason@ncdcr.gov>, "Robinson, Laura" <Laura.Robinson@ncdcr.gov>

Hi Rebekah,

I have reviewed all the records you selected that had discrepancies in the EO rank date and the Last Obs.

59 of them needed review and updating which has been done.

For extirpated or failed to find records, the latest **survey** date was used for the rank date, there were 5 of those.

For some records, the last observed date is based on a survey that provided incomplete data or just presence data. In those cases, the Rank date represents the date when the most complete count occurred. 24 records were in this category.

Thank you for asking about this, and helping us improve our database. Let me know if you have more questions.

Jame

Jame Amoroso

Conservation Information Specialist

121 W Jones St MSC 1651 Raleigh, NC 27699-1651

919 707 8621 *office*

Jame.Amoroso@ncdcr.gov

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.





From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, February 2, 2018 12:24 PM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Subject: [External] EO Rank vs Last Obs Date

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.

Jame,

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- Last observe date older than EO rank date

Our questions are:

- In the case of EO rank date older than last observe date - Can we assume an EO rank date consistent with last observed date even if it is listed as older? Example EO14 - The last observed date was 2009 and the EO rank date is 2001. Can we assume 2009 for an updated EO rank date?
- In the case of last observe date older than EO rank date - We can assume the EO rank date is accurate and maybe desk updated?

Thank you and have a great weekend!

Rebekah Reid

US Fish and Wildlife Service

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--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

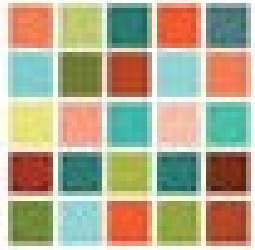
Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From: Reid, Rebekah N
To: Amoroso, Jame
Cc: Mason, Suzanne; Robinson, Laura
Subject: Re: [External] EO Rank vs Last Obs Date
Date: Thursday, February 8, 2018 10:00:03 AM
Attachments: image001.png
Importance: High

One more question! We would like to add EOs 319, 320, and 321 into our model but our January spatial data doesn't include those EOs. Can you send me the polygons for those?

Thanks.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
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On Thu, Feb 8, 2018 at 7:26 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

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>
> Thank you for looking at this for us. This is a wonderful update!
>
> We've been working on a species distribution model so I've been going through the data with a fine tooth comb. I noticed two duplicate/overlaps in the spatial data - EOs 50 and 233, and EOs 106 and 286. We've reconciled these for the purpose of our model but I thought you would like to know for future updates.
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Jame

Jame Amoroso

Conservation Information Specialist

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919 707 8621 *office*

Jame.Amoroso@ncdcr.gov

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NORTH CAROLINA Natural Heritage Program SCIENCE GUIDING CONSERVATION

NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, February 2, 2018 12:24 PM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Subject: [External] EO Rank vs Last Obs Date

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Thank you and have a great weekend!

Rebekah Reid

US Fish and Wildlife Service

Asheville Ecological Services Field Office

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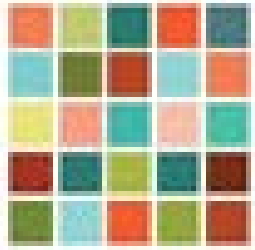
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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

From: Amoroso, Jame
To: Reid, Rebekah N
Cc: Mason, Suzanne; Robinson, Laura
Subject: RE: [External] EO Rank vs Last Obs Date
Date: Friday, February 9, 2018 9:25:08 AM
Attachments: image001.png
EO_SHAPE_2018_02_09_091617.gdb.zip
Importance: High

Hi Rebekah,

EOs 50 and 233 are part of the same Parent record and represent different survey and data entry efforts. NHP will also reconcile these.

EOs 106 and 286 have deliberate overlap as noted in the directions field –" [**Note:** Transplant plots (EO 286) source feature currently overlaps area of native plants (EO 106). M. Buchanan (pers. comm. with S. Mason, 10 March 2009) advised to leave mapping this way because the native population may be patchy and the polygon provided by Padgett (2007) may not account for this and encompass the entire extent of the occurrence.]"

Attached are the polygons for EOs 319, 320, and 321 in zipped geodatabase EO_SHAPE_2018_02_09_091617.gdb. Let me know if you would prefer .shp instead of .gdb.

Hope you have a great weekend!

Jame

From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Thursday, February 8, 2018 10:00 AM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Cc: Mason, Suzanne <suzanne.mason@ncdcr.gov>; Robinson, Laura <Laura.Robinson@ncdcr.gov>
Subject: Re: [External] EO Rank vs Last Obs Date

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Conservation Information Specialist

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919 707 8621 *office*
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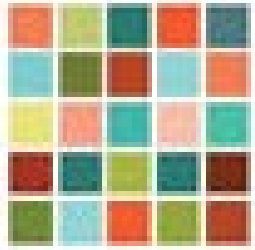
Rebekah Reid

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NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

Not processed per agreement with Plaintiff/ Requester - 20180209 092508_RE_ [External] EO Rank vs Last Obs Date - zip file. This file is shape/ GIS files that could not be attached

Attachment 20180209 092508_RE_ [External] EO Rank vs Last Obs Date.zip (24348 Bytes) cannot be converted to PDF forma

From: Reid, Rebekah N
To: Endries, Mark
Subject: Fwd: [External] EO Rank vs Last Obs Date
Date: Friday, February 9, 2018 10:25:17 AM
Attachments: image001.png
EO_SHAPE_2018_02_09_091617.gdb.zip

Mark,

Date for 319-321...

Rebekah Reid

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Asheville Ecological Services Field Office
160 Zillicoa St.
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---------- Forwarded message ----------
From: **Amoroso, Jame** <jame.amoroso@ncdcr.gov>
Date: Fri, Feb 9, 2018 at 9:25 AM
Subject: RE: [External] EO Rank vs Last Obs Date
To: "Reid, Rebekah" <rebekah_reid@fws.gov>
Cc: "Mason, Suzanne" <suzanne.mason@ncdcr.gov>, "Robinson, Laura" <Laura.Robinson@ncdcr.gov>

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Rebekah Reid

US Fish and Wildlife Service

Asheville Ecological Services Field Office

160 Zillicoa St.
Asheville, NC 28801

phone: 828-258-3939 x238

cell: 828-782-0090

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On Thu, Feb 8, 2018 at 7:26 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Jame,
>
> Thank you for looking at this for us. This is a wonderful update!
>
> We've been working on a species distribution model so I've been going through the data with a fine tooth comb. I noticed two duplicate/overlaps in the spatial data - EOs 50 and 233, and EOs 106 and 286. We've reconciled these for the purpose of our model but I thought you would like to know for future updates.
>
> Thanks again!
>
> Rebekah Reid
>
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>
> On Wed, Feb 7, 2018 at 3:21 PM, Amoroso, Jame <jame.amoroso@ncdcr.gov> wrote:

Hi Rebekah,

I have reviewed all the records you selected that had discrepancies in the EO rank date and the Last Obs.

59 of them needed review and updating which has been done.

For extirpated or failed to find records, the latest **survey** date was used for the rank date, there were 5 of those.

For some records, the last observed date is based on a survey that provided incomplete data or just presence data. In those cases, the Rank date represents the date when the most complete count occurred. 24 records were in this category.

Thank you for asking about this, and helping us improve our database. Let me know if you have more questions.

Jame

Jame Amoroso

Conservation Information Specialist

121 W Jones St MSC 1651 Raleigh, NC 27699-1651

919 707 8621 *office*

Jame.Amoroso@ncdcr.gov

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From: Reid, Rebekah [mailto:rebekah_reid@fws.gov]
Sent: Friday, February 2, 2018 12:24 PM
To: Amoroso, Jame <jame.amoroso@ncdcr.gov>
Subject: [External] EO Rank vs Last Obs Date

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.

Jame,

Attached is spreadsheet that show HENA EO records with a discrepancy between EO rank date and last observed date. There are two scenarios represented in the table:

- EO rank date older than last observe date
- Last observe date older than EO rank date

Our questions are:

- In the case of EO rank date older than last observe date - Can we assume an EO rank date consistent with last observed date even if it is listed as older? Example EO14 - The last observed date was 2009 and the EO rank date is 2001. Can we assume 2009 for an updated EO rank date?
- In the case of last observe date older than EO rank date - We can assume the EO rank date is accurate and maybe desk updated?

Thank you and have a great weekend!

Rebekah Reid

US Fish and Wildlife Service

Asheville Ecological Services Field Office

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Asheville, NC 28801

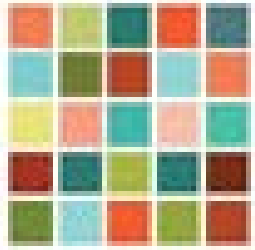
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NORTH CAROLINA
Natural Heritage Program
SCIENCE GUIDING CONSERVATION





NC DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

Not processed per agreement with Plaintiff/ Requester - 20180209 102517_Fwd_ [External] EO Rank vs Last Obs Date - zip file. These are shape/GIS files so could not be attached

Attachment 20180209 102517_Fwd_ [External] EO Rank vs Last Obs Date.zip (24348 Bytes) cannot be converted to PDF forma

From: Marshall, Michael E
To: Reid, Rebekah N; Endries, Mark
Subject: Map for current conditions for HENA
Date: Wednesday, February 14, 2018 1:06:20 PM
Importance: High

Hey guys,

I was thinking about figures and tables for the current conditions section....typically, I like to produce a figure with the locations of all of the populations across the range...color coded by resilience category....however, due to not showing locations of these populations, we're gonna have to be clever.

Mark, perhaps a figure similar to the one you produced showing # of EOs in each county....thinking the figure would show tallies within each county for very high, high, moderate, and low....just a visual representation of the data embedded in the current conditions table.

Thoughts?

Thanks,

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 7:55:03 AM
Importance: High

I think this would be an efficient way to visually represent that data. We could also get creative with the table sorting to make it easier to read...

Rebekah Reid

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Asheville Ecological Services Field Office
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On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hey guys,
>
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>
> Mike
>
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From: Endries, Mark
To: Reid, Rebekah N
Cc: Marshall, Michael E
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 8:00:23 AM
Importance: High

I'm not following. Aren't the counties already color coded?

Mark

Mark Endries
USFWS
160 Zillicoa St
Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

On Thu, Feb 15, 2018 at 7:55 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> I think this would be an efficient way to visually represent that data. We could also get creative with the table sorting to make it easier to read...
>
> Rebekah Reid
>
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> On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:
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> > Thanks,
> >
> > Mike

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From: Reid, Rebekah N
To: Endries, Mark
Cc: Marshall, Michael E
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 8:23:21 AM
Importance: High

They are color coded by number of EOs. I think what Mike is thinking is breaking that down another level and indicating how many of the EOs in each county are very high, high, moderate, and low to show resiliency.

Mike - am I catching that correctly?

Rebekah Reid

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On Thu, Feb 15, 2018 at 8:00 AM, Endries, Mark <mark_endries@fws.gov> wrote:

> I'm not following. Aren't the counties already color coded?
>
> Mark
>
> **Mark Endries**
> USFWS
> 160 Zillicoa St
> Asheville, NC 28801
> Office: 828.258.3939 ext. 231
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From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 8:51:22 AM
Attachments: CURRENT CONDITIONS.docx
Importance: High

Sorry for the confusion.....I've attached a Word document. Take a look at the Table on page 3. These are the populations we are using for Current Resilience, and it is the table I am hoping to capture with a map.....I can certainly be convinced that a map is not needed....perhaps the table by itself is sufficient. What do you guys think?

Mike

On Thu, Feb 15, 2018 at 8:23 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> They are color coded by number of EOs. I think what Mike is thinking is breaking that down another level and indicating how many of the EOs in each county are very high, high, moderate, and low to show resiliency.
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CURRENT CONDITIONS

Below we assess current resilience, representation, and redundancy as they relate to population and habitat factors known to be important for species viability. Based off of recent reports (NCNHP 2016a; NCNHP 2016b), the species consists of 113 populations distributed across 12 counties in North Carolina and South Carolina. Recent genetic research suggests that dwarf-flowered heartleaf, as originally described, is found in the southern portion of its presumed range based on current EO locations, and the northern portion could be a currently undescribed species. The genetic analysis to support this is complete, but a review of the morphology is ongoing and a new species has not yet been described (Estep pers. Comm. 2018). For the purpose of this SSA, we assume all EO detections are H. Naniflora, and represent the best currently available scientific data.

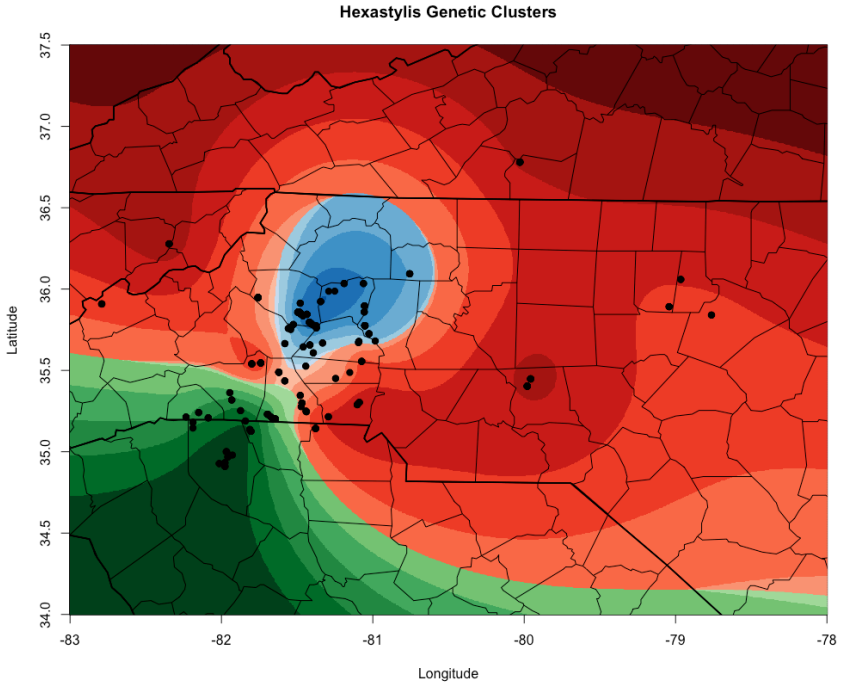


Figure 1-Recent genetic analyses detailing clustering of the genus Hexastylis. Green areas represent "true" H. naniflora; Blue represents a possible new species; Red represents other species in the genus (H. minor, H. heterophylla, etc.).

Current Population Resilience

Categorizing Resilience

For the purposes of this SSA, we use population size as the main driver of population resilience. The unit of measurement for population size in this species is a "clump" (rosette). As discussed previously, populations were delineated by NCNHP and SCNHP, and these delineations were based off of NatureServe criteria such as EO separation distance and intervening landscape matrix. EO data included a wide range of years since the species was last observed at a given location (1964-2017), so although recent reports suggest the species consists of 113 populations, some of that data is fairly outdated. For the purposes of this SSA, we only used EO that were last observed within the last 10 years (2007-2017). Based on that criteria, there are currently 68 populations distributed across the range of dwarf-flowered heartleaf, although this may be an underestimate as discussed in more detail in the habitat modelling section later.

To determine overall resilience for populations, we used EO viability ranks and expert opinion to bin population size classes into corresponding resilience categories. EO viability ranks for the species include excellent, good, fair, poor, extant, historical, and failed to find. The primary factor in determining these ranks is EO size (as quantified by number of clumps). Condition of habitat (vegetation community and structure) and landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. Appendix 2 shows the NCNHP EO rank specifications for dwarf-flowered heartleaf. The EO rank specifications suggest good-excellent viability for populations consisting of at least 500 individuals, given there is sufficient high quality habitat; fair viability for populations consisting of 100-500 individuals, depending on habitat conditions; poor viability for populations consisting of less than 100 individuals. Recent reports (NCNHP 2016a; NCNHP 2016b) focus monitoring studies on populations with greater

than 1,000 individuals, populations that are assumed to be extremely viable. Because we do not have habitat level information for every population we assessed, we synthesized all of the above population size information and created four resilience categories as follows:

- Very high—populations with >1,000 individuals; very high probability of persistence for 20-30 years at or above the current population size.
- High—populations with 500-1,000 individuals; moderate-high probability of persistence for 20-30 years at or above the current population size.
- Moderate—populations with 100-500 individuals; low probability of persistence for 20-30 years at or above the current population size.
- Low—populations with <100 individuals; low probability of persistence, and moderate-high probability of extirpation for 20-30 years at or above the current population size.

Occupancy and Abundance

There are 67 populations of dwarf-flowered heartleaf that have been observed within the last 10 years (Table ##), and resilience of these populations is as follows: 27 (very high); 5 (high); 20 (moderate); 15 (low).

Site Name	State	Last Observed	Total plants	Resilience
Mill Creek Forest and Seep	North Carolina	2016	>1000	very high
Island Creek Heath Bluff	North Carolina	2016	>1000	very high
NCDOT TIP: R-2824	North Carolina	2015	>1000	very high
Murrays Mill/Upper Balls Creek NA	North Carolina	2013	>1000	very high
Big Horse Creek Rare Plant Site	North Carolina	2015	>1000	very high
Broad River/Sandy Run NA	North Carolina	2012	>1000	very high
New Hope Springhead Swamp	North Carolina	2016	>1000	very high
Facebook Site	North Carolina	2016	>1000	very high
Davenport Road/Mountain View Rare Plant Site	North Carolina	2016	>1000	very high
Broad River: Floyds Creek	North Carolina	2016	>1000	very high

Catawba River: Hoyle Crk-Micol Crk	North Carolina	2013	>1000	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	North Carolina	2013	>1000	very high
Buffalo Creek: Tributaries N and S of SR 2047	North Carolina	2012	>1000	very high
Buffalo Creek: Kings Mountain Res	North Carolina	2016	>1000	very high
Broad River: Brushy Creek	North Carolina	2016	>1000	very high
Peaked Top Rare Plant Site/Foothills Landfill	North Carolina	2014	>1000	very high
Jacob Fork West Corridor	North Carolina	2012	>1000	very high
Floyds Creek Tributray Rare Plant Site	North Carolina	2012	>1000	very high
New Bethel Rare Plant Site	North Carolina	2015	>1000	very high
Cliffside Steam Station	North Carolina	2016	>1000	very high
Rhyne Conservation Preserve	North Carolina	2016	>1000	very high
Glade Creek, Alex County	North Carolina	2017	>1000	very high
Richardson Creek trib above Toms Lake	North Carolina	2016	>1000	very high
Gunpowder Creek: South of Hudson	North Carolina	2012	>1000	very high
Taylor Blalock Res	South Carolina	2016	>1000	very High
DNR Peters Creek Heritage Preserve	South Carolina	2016	>1000	very High
Cowpens NBF - Site 1	South Carolina	2016	>1000	very High
Little Gunpowder Creek Rare Plant Site 1	North Carolina	2015	500-1000	high
Little Gunpowder Creek Rare Plant Site 2	North Carolina	2015	500-1000	high
Buffalo Creek Rare Plant Site	North Carolina	2012	500-1000	high
Northern Catawba County	North Carolina	2017	500-1000	high
Rock Barn Solar Farm	South Carolina	2010-2011	500-1000	high
NCDOT TIP R-2824	North Carolina	2015	100-500	moderate
West Shelby Mesic Slope	North Carolina	2016	100-500	moderate
Cat Square Heartleaf Forest	North Carolina	2012	100-500	moderate
Jonas Road Rare Plant Site	North Carolina	2014	100-500	moderate
South Fork Catawba River, Henry Fork	North Carolina	2007	100-500	moderate
No Business Creek, Boyd Tract	North Carolina	2007	100-500	moderate
Broad River/Sandy Run NA	North Carolina	2012	100-500	moderate
Buffalo Shoals Creek	North Carolina	2014	100-500	moderate
Fox Knoll Farm	North Carolina	2016	100-500	moderate
Forest City: Adj to Isothermal CC	North Carolina	2010	100-500	moderate

Hickory Area	North Carolina	2016	100-500	moderate
UT of Kings Mountain Res	North Carolina	2012	100-500	moderate
Brushy Creek Headwaters	North Carolina	2014	100-500	moderate
Smith Cliff/Henry Fork River	North Carolina	2015	100-500	moderate
Simms Hill/Little River Uplands	North Carolina	2015	100-500	moderate
Collinsville (Hughes) Creek Slopes	North Carolina	2016	100-500	moderate
Burke County - Drowning Creek UT	North Carolina	2017	100-500	moderate
Third Creek Rare Plant Site	North Carolina	2010	100-500	moderate
First Broad River: Crooked Run Creek	North Carolina	2010	100-500	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	North Carolina	2016	100-500	moderate
Buffalo Creek: Ravine	North Carolina	2007	<100	low
Buffalo Creek: Potts Creek	North Carolina	2012	<100	low
Pott Creek	North Carolina	2012	<100	low
Northeast Lincolnton: UT Walker Branch	North Carolina	2009	<100	low
Gunpowder Creek	North Carolina	2012	<100	low
Lincoln County, SR-1314	North Carolina	2014	<100	low
Levan Family Farm	North Carolina	2013	<100	low
Fanjoy Road Site	North Carolina	2015	<100	low
South Mountains Pleasant Grove Uplands	North Carolina	2016	<100	low
NCDOT TIP R-3603A	North Carolina	2017	<100	low
Hickory Creek - UT (Shelby High School)	North Carolina	2016	<100	low
Boulder Creek Subdivision - Jordan Road	South Carolina	2016	<100	Low
Gateway Elementary School	South Carolina	2017	<100	Low
Killian Crossroads	North Carolina	2010	<100	Low
Beaverdam Crk at First Broad River	North Carolina	2011	<100	Low

Although we lack an adequate past time series of abundance data for all populations to estimate growth rates or population trends, NCNHP conducted surveys of thirteen of the largest populations across the range of the species from 2012-2016. Table ## shows the results of these surveys. Two populations show an increasing trend, nine show a stable trend, and two show a decreasing trend.

Table ##-Summary of population trends over 5 years of monitoring data for 13 of the largest populations of dwarf-flowered heartleaf across its range (from: NCNHP 2016).

Commented [MME1]: DOT data.....add here.

Trend	Site	2016 estimated number of plants (Rosettes)	2016 area occupied (Acres)
Increasing	Cliffside Steam Station (EO 276)	39,535	52
	Broad River: Floyds Creek, Long Branch (EO 177)	12,687	5.67
Stable	Island Creek Bluff/Love Lady Site (EO 029)	50,481	61.76
	Rhyne Preserve (EO 302)	19,873	22.43
	Mills Creek Forest and Seep (EO 023)	1,733	1.39
	New Hope Springhead Swamp (EO 125)	12,235	5.03
	Broad River: Henson's Creek, Brice, & Sandy Mush Outcrop (EO 099)	106,940	83.39
	Broad River: Cleghorn Creek, US 221 (EO 176)	6,750	7.24
	Cowpens National Battlefield (SC EO 016, 017, 018)	2,823	6.05
	Peters Creek Preserve (SC EO 011)	3,306	8.98
	Blalock Reservoir (SC EO 007, 031)	3,505	7.59
Decreasing	Second Broad River (Forest City Industrial Complex) (EO 154)	2,576	4.74
	South Fork Catawba River: Jacob Fork, Camp Creek (EO 158)	123	0.09

Habitat Factors: Slope, Aspect, Elevation, Soil, and Forest Type

This will be where we describe our population model….what covariates are used….what covariates best explain areas where HENA is highly resilient. I can envision a table that lists all of the populations, and columns describing habitat elements within each population. Also, we can describe how much potential habitat is out there based on the model (occupied and unoccupied)…this will set us up for scenarios in the future condition.

Resilience Summary

A narrative that summarizes how many populations are on the landscape and their associated resilience score.

Current Species Representation

Representation describes the ability of a species to adapt to changing environmental conditions. We lack genetic and ecological diversity data to characterize representation for dwarf-flowered heartleaf. In the absence of species-specific genetic and ecological diversity information, we typically evaluate representation based on the extent and variability of habitat characteristics across the geographical range. However, the dwarf-flowered heartleaf has a very limited range, and after consulting with experts, we decided delineating representative units was not appropriate for this species.

Current Species Redundancy

Redundancy describes the ability of a species to withstand catastrophic events. Measured by the number of populations, their resiliency, and their distribution (and connectivity), redundancy gauges the probability that the species has a margin of safety to withstand or can bounce back from catastrophic events (such as a rare destructive natural event or episode involving many populations). Redundancy for dwarf-flowered heartleaf is the total number and resilience of population segments and their distribution across the species range. As stated previously, there are 68 populations of dwarf-flowered heartleaf that have been observed within the last 10 years, and resilience of these populations is as follows: 27 (very high); 5 (high); 20 (moderate); 13 (low); 2 (unknown); 1 (possibly extirpated). The populations are spread across the range, although a majority occur in North Carolina. Although, there appears to be adequate redundancy within the range of dwarf-flowered heartleaf, the species range is very small, making it potentially vulnerable to catastrophic events. Thus we classify redundancy as inherently low for the species.

From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 8:58:35 AM
Importance: High

If we add county to that table and a summary at the bottom, that may do the same thing as the map...

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Feb 15, 2018 at 8:51 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

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Mark

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USFWS
160 Zillicoa St
Asheville, NC 28801
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Mobile: 828.215.1740

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From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 9:02:38 AM
Importance: High

Agreed....never mind on the map....although, once we get to the recommendation meeting, we might decide to produce a map printout that captures that...seems the decision makers like to see maps....but we'll cross that bridge once we get to it.

Thanks!

Mike

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On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

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Mark, perhaps a figure similar to the one you produced showing # of EOs in each county....thinking the figure would show tallies within each county for very high, high, moderate, and low....just a visual representation of the data embedded in the current conditions table.

Thoughts?

Thanks,

Mike

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To: Marshall, Michael E
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 9:06:00 AM
Importance: High

I can work on the table update. I've got some time this morning and tomorrow morning.

Rebekah Reid

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From: Endries, Mark
To: Reid, Rebekah N
Cc: Marshall, Michael E
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 10:16:53 AM
Attachments: MaxentMap.png
Replicated maxent model for Hexastylis_naniflora.pdf
Importance: High

Hi All,

Here is a Maxent output map and the latest model output. Last night I ran a 10 replicate model. This runs 10 separate models then smashes them all together to get an average output. I didn't have it create the response curves or jackknife tests, we can use the single run output for that.

What table summaries are needed?

Thanks!

Mark

Mark Endries
USFWS
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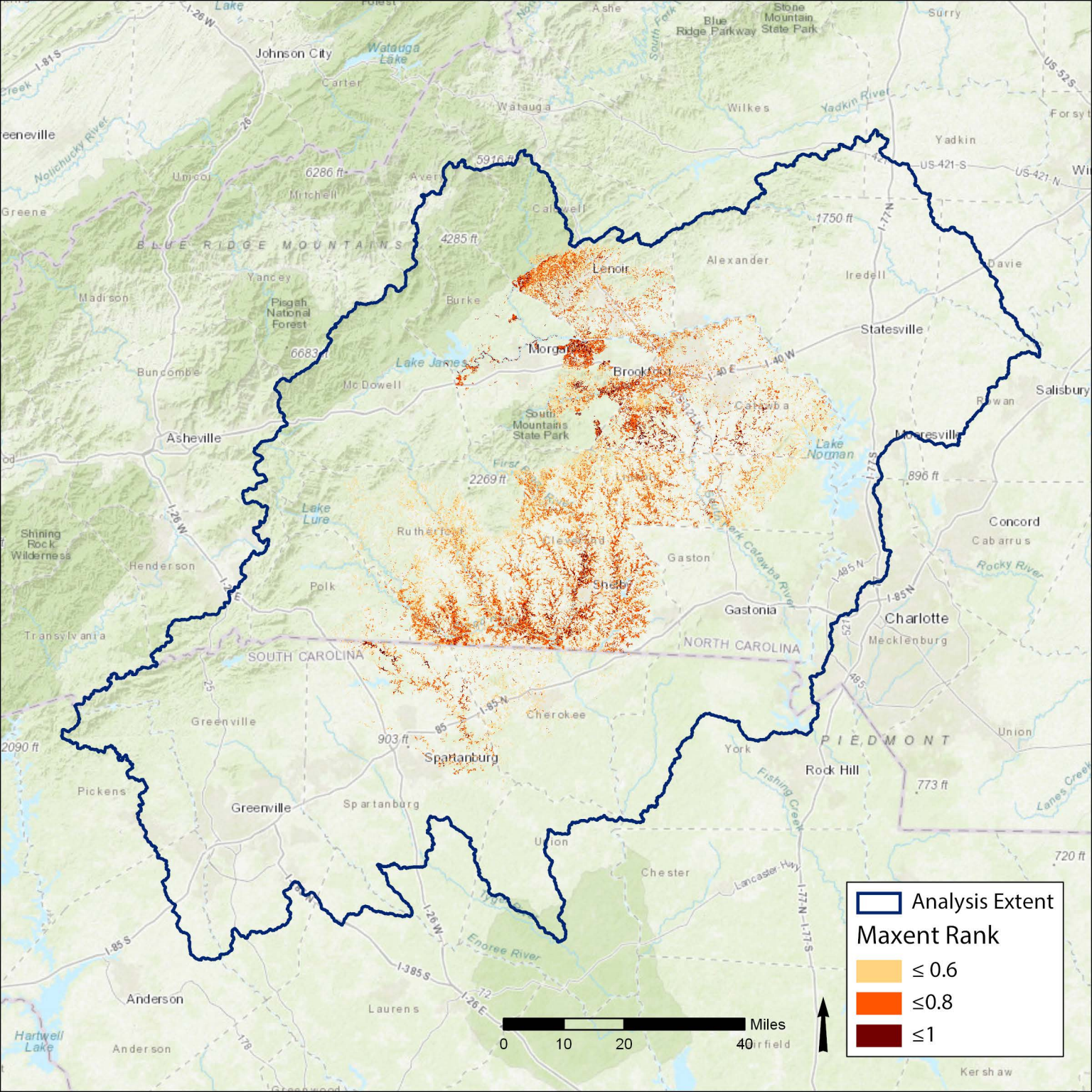
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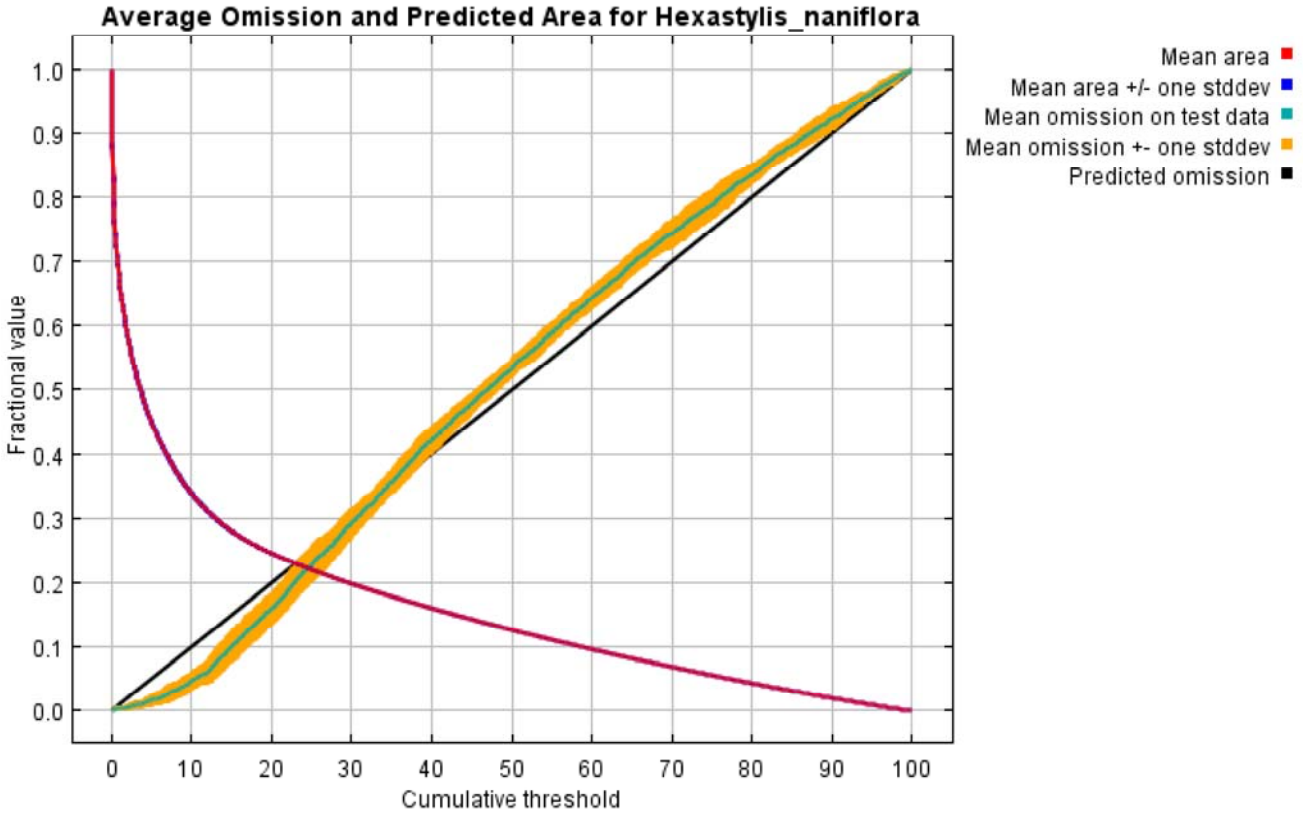

Analysis Extent
Maxent Rank
≤ 0.6
≤0.8
≤1
Miles
0
10
20
40
Johnson City
Asheville
Lenoir
Morganton
Statesville
Hickory
Salisbury
Concord
Charlotte
Gastonia
Shelby
Rutherfordton
Spartanburg
Greenville
Anderson
Rock Hill
York
Chester
Union
Laurens
Cherokee
Pickens
Henderson
Transylvania
Polk
McDowell
Burke
Caldwell
Alexander
Iredell
Davie
Rowan
Cabarrus
Mecklenburg
Gaston
Lincoln
Catawba
Wilkes
Watauga
Ashe
Avery
Mitchell
Yancey
Madison
Buncombe
Greene
Unicoi
Carter
Surry
Yadkin
Forsyth
Stanly
Union
Lancaster
Chesterfield
Shining Rock Wilderness
Pisgah National Forest
South Mountains State Park
Lake James
Lake Lure
Lake Norman
Watauga Lake
Hartwell Lake
Blue Ridge Parkway
Stone Mountain State Park
Nolichucky River
South Fork
Yadkin River
First Broad River
Rocky River
Fishing Creek
Lanes Creek
Enoree River
Lancaster Hwy
BLUE RIDGE MOUNTAINS
PIEDMONT
NORTH CAROLINA
SOUTH CAROLINA
6286 ft
5916 ft
4285 ft
6683
1750 ft
2269 ft
896 ft
903 ft
2090 ft
773 ft
720 ft
I-26 W
I-81 S
I-77 N
I-40 W
I-85 N
I-85 S
I-26 E
I-385 S
I-485 N
US-421-S
US-421-N
US-52 S
NC-16
NC-18
NC-150
NC-10
NC-127
NC-321
NC-274
NC-49
NC-72
NC-178
NC-25
NC-85
NC-521
NC-485

Replicated maxent model for Hexastylis_naniflora

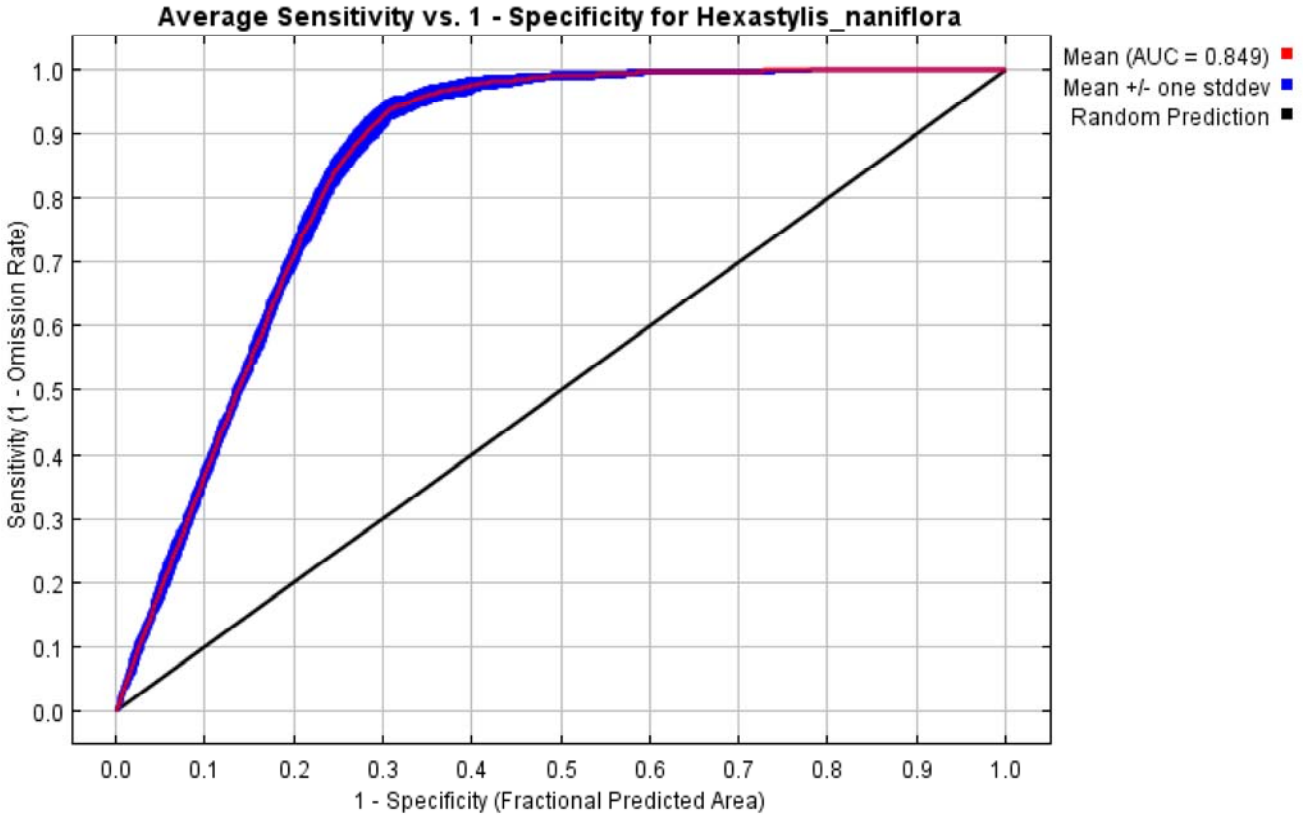
This page summarizes the results of 10-fold cross-validation for Hexastylis_naniflora, created Wed Feb 14 17:50:27 EST 2018 using Maxent version 3.4.1. The individual models are here: [0] [1] [2] [3] [4] [5] [6] [7] [8] [9]

Analysis of omission/commission

The following picture shows the test omission rate and predicted area as a function of the cumulative threshold, averaged over the replicate runs. The omission rate should be close to the predicted omission, because of the definition of the cumulative threshold.



The next picture is the receiver operating characteristic (ROC) curve for the same data, again averaged over the replicate runs. Note that the specificity is defined using predicted area, rather than true commission (see the paper by Phillips, Anderson and Schapire cited on the help page for discussion of what this means). The average test AUC for the replicate runs is 0.849, and the standard deviation is 0.006.



Analysis of variable contributions

The following table gives estimates of relative contributions of the environmental variables to the Maxent model. To determine the first estimate, in each iteration of the training algorithm, the increase in regularized gain is added to the contribution of the corresponding variable, or subtracted from it if the change to the absolute value of lambda is negative. For the second estimate, for each environmental variable in turn, the values of that variable on training presence and background data are randomly permuted. The model is reevaluated on the permuted data, and the resulting drop in training AUC is shown in the table, normalized to percentages. As with the variable jackknife, variable contributions should be interpreted with caution when the predictor variables are correlated. Values shown are averages over replicate runs.

Variable	Percent contribution	Permutation importance
ssurgo_mukey	23.3	40.7
temp_min	20.7	23.9
precip_annual	14.6	16.6
landcover	13	4.8
landcovermajority	9.5	1.5
landcoverreidgrp	7.3	0.6
geomorp05110	6.4	1.3
elevation	5.2	10.7

Command line to repeat this species model: java density.MaxEnt nowarnings noprefixes -E "" -E Hexastylis_naniflora nopictures outputdirectory=D:\Users\mendries\DataRequests\ReidR\HENA\Maxent\Output\CellCenterpoint_Replicate samplesfile=D:\Users\mendries\DataRequests\ReidR\HENA\Maxent\EOData\RasterCenterpointEOsPlus.csv environmentallayers=D:\Users\mendries\DataRequests\ReidR\HENA\Maxent\EnvironmentalLayers replicates=10 maximumiterations=5000 -N aspect -N aspect_simple -N landcoverdiversity -N slope -N ssurgo_drainage -N ssurgo_hydro -N temp_max -t geomorp05110 -t landcover -t landcovermajority -t landcoverreidgrp -t ssurgo_mukey

From: Marshall, Michael E
To: Endries, Mark
Cc: Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 10:31:35 AM
Importance: High

Looks great, thanks Mark!

As for tables....some of these are embedded in the output (#1 below), but my initial thoughts:

1--Table showing the variables included and their contribution to the model

2--Table showing acreage of habitat...thinking acres of orange; acres of red; and total acres

3--I haven't thought this one through very well, so please correct me if you think this is irrelevant.....but a summary, or summary table, of how the actual populations fell out within the predicted habitat....just trying to see if the majority of the current populations fall within the higher ranked habitat....also, did the populations we categorized as very high and/or high end up in the high ranked habitat? Also, did low resilience populations tend to fall in the lower ranked habitat?

4--I'm not very familiar with Maxent, and I admit to being weak in stats, but is there some summary stats we can show for a goodness of fit, or strength of the model? Is the program calculating AIC scores for all potential models? Any type of basic summary stats that show the model is a good one, in a nice clean simple fashion, would be awesome.

Thanks,

Mike

On Thu, Feb 15, 2018 at 10:16 AM, Endries, Mark <mark_endries@fws.gov> wrote:

> Hi All,
>
> Here is a Maxent output map and the latest model output. Last night I ran a 10 replicate model. This runs 10 separate models then smashes them all together to get an average output. I didn't have it create the response curves or jackknife tests, we can use the single run output for that.
>
> What table summaries are needed?
>
> Thanks!
>
> Mark
>
> **Mark Endries**
> USFWS
> 160 Zillicoa St
> Asheville, NC 28801
> Office: 828.258.3939 ext. 231

Mobile: 828.215.1740

On Thu, Feb 15, 2018 at 9:06 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

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On Thu, Feb 15, 2018 at 8:23 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 10:51:37 AM
Attachments: Resilience Table 2.0.xlsx
Importance: High

Found some nifty excel functions so this was a snap. Attached is the updated resilience table sorted by resilience category, then county, then site name. Also included is a county summary table with the total in each resilience category and total current populations per county. As a side note, each county in our range has at least one current population in the table.

Rebekah Reid

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Site Name	State	County	Last Observed	Total plants	Resilience
Glade Creek, Alex County	North Carolina	Alexander	2017	>1000	very high
Catawba River: Hoyle Crk-Micol Crk	North Carolina	Burke	2013	>1000	very high
Island Creek Heath Bluff	North Carolina	Burke	2016	>1000	very high
Gunpowder Creek: South of Hudson	North Carolina	Caldwell	2012	>1000	very high
Peaked Top Rare Plant Site/Foothills Landfill	North Carolina	Caldwell	2014	>1000	very high
Jacob Fork West Corridor	North Carolina	Catawba	2012	>1000	very high
Murrays Mill/Upper Balls Creek NA	North Carolina	Catawba	2013	>1000	very high
NCDOT TIP: R-2824	North Carolina	Catawba	2015	>1000	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	North Carolina	Catawba	2013	>1000	very high
Cowpens NBF - Site 1	South Carolina	Cherokee	2016	>1000	very High
Cliffside Steam Station	North Carolina	Clev/Ruth	2016	>1000	very high
Broad River/Sandy Run NA	North Carolina	Cleveland	2012	>1000	very high
Broad River: Brushy Creek	North Carolina	Cleveland	2016	>1000	very high
Buffalo Creek: Kings Mountain Res	North Carolina	Cleveland	2016	>1000	very high
Buffalo Creek: Tributaries N and S of SR 2047	North Carolina	Cleveland	2012	>1000	very high
Rhyne Conservation Preserve	North Carolina	Lincoln	2016	>1000	very high
Mill Creek Forest and Seep	North Carolina	Polk	2016	>1000	very high
New Hope Springhead Swamp	North Carolina	Polk	2016	>1000	very high
Big Horse Creek Rare Plant Site	North Carolina	Rutherford	2015	>1000	very high
Broad River: Floyds Creek	North Carolina	Rutherford	2016	>1000	very high
Davenport Road/Mountain View Rare Plant Site	North Carolina	Rutherford	2016	>1000	very high
Facebook Site	North Carolina	Rutherford	2016	>1000	very high
Floyds Creek Tributray Rare Plant Site	North Carolina	Rutherford	2012	>1000	very high
New Bethel Rare Plant Site	North Carolina	Rutherford	2015	>1000	very high
Richardson Creek trib above Toms Lake	North Carolina	Rutherford	2016	>1000	very high
DNR Peters Creek Heritage Preserve	South Carolina	Spartanburg	2016	>1000	very High
Taylor Blalock Res	South Carolina	Spartanburg	2016	>1000	very High
Little Gunpowder Creek Rare Plant Site 1	North Carolina	Caldwell	2015	500-1000	high
Little Gunpowder Creek Rare Plant Site 2	North Carolina	Caldwell	2015	500-1000	high
Northern Catawba County	North Carolina	Catawba	2017	500-1000	high
Rock Barn Solar Farm	North Carolina	Catawba	2010-2011	500-1000	high
Buffalo Creek Rare Plant Site	North Carolina	Cleveland	2012	500-1000	high
Third Creek Rare Plant Site	North Carolina	Alexander	2010	100-500	moderate
Hickory Area	North Carolina	Burk/Cata/Cald	2016	100-500	moderate
Burke County - Drowning Creek UT	North Carolina	Burke	2017	100-500	moderate
Simms Hill/Little River Uplands	North Carolina	Burke	2015	100-500	moderate
Smith Cliff/Henry Fork River	North Carolina	Burke	2015	100-500	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	North Carolina	Catawba	2016	100-500	moderate
NCDOT TIP R-2824	North Carolina	Catawba	2015	100-500	moderate
South Fork Catawba River, Henry Fork	North Carolina	Catawba	2007	100-500	moderate
Broad River/Sandy Run NA	North Carolina	Cleveland	2012	100-500	moderate
Brushy Creek Headwaters	North Carolina	Cleveland	2014	100-500	moderate
First Broad River: Crooked Run Creek	North Carolina	Cleveland	2010	100-500	moderate
No Business Creek, Boyd Tract	North Carolina	Cleveland	2007	100-500	moderate
West Shelby Mesic Slope	North Carolina	Cleveland	2016	100-500	moderate
UT of Kings Mountain Res	North Carolina	Gaston	2012	100-500	moderate
Buffalo Shoals Creek	North Carolina	Iredell	2014	100-500	moderate
Cat Square Heartleaf Forest	North Carolina	Lincoln	2012	100-500	moderate
Collinsville (Hughes) Creek Slopes	North Carolina	Polk	2016	100-500	moderate
Fox Knoll Farm	North Carolina	Polk	2016	100-500	moderate
Forest City: Adj to Isothermal CC	North Carolina	Rutherford	2010	100-500	moderate
Jonas Road Rare Plant Site	North Carolina	Rutherford	2014	100-500	moderate
NCDOT TIP R-3603A	North Carolina	Alexander	2017	<100	low
South Mountains Pleasant Grove Uplands	North Carolina	Burke	2016	<100	low
Gunpowder Creek	North Carolina	Caldwell	2012	<100	low
Killian Crossroads	North Carolina	Catawba	2010	<100	low
Pott Creek	North Carolina	Catawba	2012	<100	low
Beaverdam Crk at First Broad River	North Carolina	Cleveland	2011	<100	low
Buffalo Creek: Potts Creek	North Carolina	Cleveland	2012	<100	low

County	Very High	High	Moderate	Low	Totals
Alexander	1		1	1	3
Burk/Cata/Cald			1		1
Burke	2		3	1	6
Caldwell	2	2		1	5
Catawba	4	2	3	2	11
Cherokee	1				1
Clev/Ruth	1				1
Cleveland	4	1	5	4	14
Gaston			1		1
Greenville				2	2
Iredell			1	2	3
Lincoln	1		1	2	4
Polk	2		2		4
Rutherford	7		2		9
Spartanburg	2				2
Totals	27	5	20	15	67

Buffalo Creek: Ravine	North Carolina	Cleveland	2007	<100	low
Hickory Creek - UT (Shelby High School)	North Carolina	Cleveland	2016	<100	low
Boulder Creek Subdivision - Jordan Road	South Carolina	Greenville	2016	<100	low
Gateway Elementary School	South Carolina	Greenville	2017	<100	low
Fanjoy Road Site	North Carolina	Iredell	2015	<100	low
Levan Family Farm	North Carolina	Iredell	2013	<100	low
Lincoln County, SR-1314	North Carolina	Lincoln	2014	<100	low
Northeast Lincolnton: UT Walker Branch	North Carolina	Lincoln	2009	<100	low

From: Marshall, Michael E
To: Reid, Rebekah N
Cc: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 10:55:45 AM
Importance: High

Awesome! This is perfect....thanks Rebekah!

Mike

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Mark

Mark Endries
USFWS
160 Zillicoa St
Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

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To: Marshall, Michael E
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 10:58:23 AM
Importance: High

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Importance: High

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I want to start digging in to the future predictions, too...interesting stuff. Talk with you tomorrow.

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phone: 828-258-3939 x238
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To: Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 11:50:37 AM
Importance: High

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Burke	2		3	1	6
Caldwell	2	2		1	5
Catawba	4	2	3	2	11
Cherokee	1				1
Clev/Ruth	1				1
Cleveland	4	1	5	4	14
Gaston			1		1
Greenville				2	2
Iredell			1	2	3
Lincoln	1		1	2	4
Polk	2		2		4
Rutherford	7		2		9
Spartanburg	2				2
Totals	27	5	20	15	67
% of Total	40	7	30	22	100
Cumulative %	40	48	78	100	

Rebekah Reid

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From: Reid, Rebekah N
To: Marshall, Michael E
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 12:31:33 PM
Importance: High

Hi,

I sent Tim Bassette an email asking if that was OK. I haven't heard back from him. I can follow up with a call. He was pretty adamant that I shouldn't share that data until it was final. Can we leave it out for now and add it in if he gives permission?

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Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

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From: Marshall, Michael E
To: Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 12:34:19 PM
Importance: High

Sure thing....we'll leave it out for now.

Thanks!

Mike

On Thu, Feb 15, 2018 at 12:31 PM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Hi,
>
> I sent Tim Bassette an email asking if that was OK. I haven't heard back from him. I can follow up with a call. He was pretty adamant that I shouldn't share that data until it was final. Can we leave it out for now and add it in if he gives permission?
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> On Thu, Feb 15, 2018 at 11:50 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Quick followup....should I go ahead and include the NCDOT trend data in the current draft? I'm thinking to include the populations for which we have at least 4 years of monitoring data.....
> >
> > Thanks,
> >
> > Mike
> >
> > On Thu, Feb 15, 2018 at 11:17 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > Yes, thought it was interesting to see that Cleveland and Catawba have more current pops but Rutherford beats them both in resiliency.
> > >
> > > I want to start digging in to the future predictions, too...interesting stuff. Talk with you tomorrow.
> > >
> > > Rebekah Reid
> > >
> > > US Fish and Wildlife Service
> > > Asheville Ecological Services Field Office

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On Thu, Feb 15, 2018 at 11:06 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Nice! Rutherford looks like the county to be in if you're a dwarf-flowered heartleaf!
>
> Will be interesting to start looking at SLEUTH development projections and seeing where projected overlap of development and existing populations will occur....my guess is that the species will still be in relatively good shape based on some human population projections I've been looking at for those counties.
>
> Mike
>
> On Thu, Feb 15, 2018 at 10:58 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > No problem. I was just curious and calculated some percentages. 78% of our current pops are >/- moderate. Check it out.
> >
> > | County | Very High | High | Moderate | Low | Totals |
> > |---|---|---|---|---|---|
> > | Alexander | 1 | | 1 | 1 | 3 |
> > | Burk/Cata/Cald | | | 1 | | 1 |
> > | Burke | 2 | | 3 | 1 | 6 |
> > | Caldwell | 2 | 2 | | 1 | 5 |
> > | Catawba | 4 | 2 | 3 | 2 | 11 |
> > | Cherokee | 1 | | | | 1 |
> > | Clev/Ruth | 1 | | | | 1 |
> > | Cleveland | 4 | 1 | 5 | 4 | 14 |
> > | Gaston | | | 1 | | 1 |
> > | Greenville | | | | 2 | 2 |
> > | Iredell | | | 1 | 2 | 3 |
> > | Lincoln | 1 | | 1 | 2 | 4 |
> > | Polk | 2 | | 2 | | 4 |
> > | Rutherford | 7 | | 2 | | 9 |
> > | Spartanburg | 2 | | | | 2 |
> > | Totals | 27 | 5 | 20 | 15 | 67 |
> > | | | | | | |
> > | % of Total | 40 | 7 | 30 | 22 | 100 |
> > | Cumulative % | 40 | 48 | 78 | 100 | |
> >
> > Rebekah Reid
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On Thu, Feb 15, 2018 at 10:55 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Awesome! This is perfect....thanks Rebekah!
>
> Mike
>
> On Thu, Feb 15, 2018 at 10:51 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > Found some nifty excel functions so this was a snap. Attached is the updated resilience table sorted by resilience category, then county, then site name. Also included is a county summary table with the total in each resilience category and total current populations per county. As a side note, each county in our range has at least one current population in the table.
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> > > I can work on the table update. I've got some time this morning and tomorrow morning.
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> > > On Thu, Feb 15, 2018 at 9:02 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

Agreed....never mind on the map....although, once we get to the recommendation meeting, we might decide to produce a map printout that captures that...seems the decision makers like to see maps....but we'll cross that bridge once we get to it.

Thanks!

Mike

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> > > Mike - am I catching that correctly?
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On Thu, Feb 15, 2018 at 8:00 AM, Endries, Mark <mark_endries@fws.gov> wrote:

I'm not following. Aren't the counties already color coded?

Mark

Mark Endries
USFWS
160 Zillicoa St
Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

On Thu, Feb 15, 2018 at 7:55 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

I think this would be an efficient way to visually represent that data. We could also get creative with the table sorting to make it easier to read...

Rebekah Reid

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On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

Hey guys,

I was thinking about figures and tables for the current conditions section....typically, I like to produce a figure with the locations of all of the populations across the range...color coded by resilience category....however, due to not showing locations of these populations, we're gonna have to be clever.

Mark, perhaps a figure similar to the one you produced showing # of EOs in each county....thinking the figure would show tallies within each county for very high, high, moderate, and low....just a visual representation of the data embedded in the

current conditions table.

Thoughts?

Thanks,

Mike

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Mike Marshall
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From: Endries, Mark
To: Reid, Rebekah N
Cc: Marshall, Michael E
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 1:53:54 PM
Importance: High

Looks great. Could I get it with the Population number or EOID so I can link it in the GIS?

Mark

Mark Endries
USFWS
160 Zillicoa St
Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

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From: Endries, Mark
To: Marshall, Michael E; Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 2:10:10 PM
Attachments: CellCenterPointHENAPopulationMaxentScores.xlsx
Importance: High

Hi Mike,

Yes, the data for Table 1 can be gleaned from the latest maxent output.

Here's the data for Table 2:

	Acres	Square Miles	% of total
Total Area	5,029,119.60	7,858.03	
Maxent Over 0.4	332,494.32	519.52	6.61%
Maxent Over 0.6	146,712.63	229.24	2.92%
Maxent over 0.8	22,677.96	35.43	0.45%

I've attached the excel spreadsheet needed to sift through the data to calculate Table 3. Mean maxent score is .67, median is .72. Low score is 0, high score is 0.92. Missing from this is the link to resilience. I've asked for an updated resiliency table to include the Population number so I can link everything together.

For table 4 we can just list the mean AUC (0.849). For AUC a value of 0.5 is no better than random. Lower means it's worse than random. A higher AUC means greater predictive power. Our AUC of 0.849 is decent, not stellar, but decent.

We can chat more tomorrow, just trying to rush some of this out now in case you wanted to use it in the document you are sending out on Monday.

Thanks!

Mark

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On Thu, Feb 15, 2018 at 10:31 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Looks great, thanks Mark!
>
> As for tables....some of these are embedded in the output (#1 below), but my initial thoughts:
>
> 1--Table showing the variables included and their contribution to the model
>
> 2--Table showing acreage of habitat...thinking acres of orange; acres of red; and total acres

3--I haven't thought this one through very well, so please correct me if you think this is irrelevant.....but a summary, or summary table, of how the actual populations fell out within the predicted habitat....just trying to see if the majority of the current populations fall within the higher ranked habitat....also, did the populations we categorized as very high and/or high end up in the high ranked habitat? Also, did low resilience populations tend to fall in the lower ranked habitat?

4--I'm not very familiar with Maxent, and I admit to being weak in stats, but is there some summary stats we can show for a goodness of fit, or strength of the model? Is the program calculating AIC scores for all potential models? Any type of basic summary stats that show the model is a good one, in a nice clean simple fashion, would be awesome.

Thanks,

Mike

On Thu, Feb 15, 2018 at 10:16 AM, Endries, Mark <mark_endries@fws.gov> wrote:

> Hi All,
>
> Here is a Maxent output map and the latest model output. Last night I ran a 10 replicate model. This runs 10 separate models then smashes them all together to get an average output. I didn't have it create the response curves or jackknife tests, we can use the single run output for that.
>
> What table summaries are needed?
>
> Thanks!
>
> Mark
>
> **Mark Endries**
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> Asheville, NC 28801
> Office: 828.258.3939 ext. 231
> Mobile: 828.215.1740
>
> On Thu, Feb 15, 2018 at 7:55 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > I think this would be an efficient way to visually represent that data. We could also get creative with the table sorting to make it easier to read...
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
> > phone: 828-258-3939 x238
> > cell: 828-782-0090
> >
> > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
> >
> > On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:
> >
> > > Hey guys,
> > >
> > > I was thinking about figures and tables for the current conditions section....typically, I like to produce a figure with the locations of all of the populations across the range...color coded by resilience category....however, due to not showing locations of these populations, we're gonna have to be clever.
> > >
> > > Mark, perhaps a figure similar to the one you produced showing # of EOs in each county....thinking the figure would show tallies within each county for very high, high, moderate, and low....just a visual representation of the data embedded in the current conditions table.

Thoughts?

Thanks,

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1528530.005	0.506
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528530.005	0.771
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528530.005	0.752
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282320.002	1528500.005	0.540
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1528500.005	0.513
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282650.002	1528500.005	0.717
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1528500.005	0.785
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528500.005	0.771
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528500.005	0.755
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528470.005	0.707
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528470.005	0.589
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282290.002	1528470.005	0.530
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282320.002	1528470.005	0.515
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1528470.005	0.510
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282650.002	1528470.005	0.732
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1528470.005	0.635
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528470.005	0.723
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528470.005	0.706
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528470.005	0.679
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528440.005	0.705
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528440.005	0.587
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282290.002	1528440.005	0.526
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1528440.005	0.641
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528440.005	0.727
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528440.005	0.719
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528440.005	0.763
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528440.005	0.693
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282830.002	1528440.005	0.675
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528410.005	0.713
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528410.005	0.540
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282290.002	1528410.005	0.533
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1528410.005	0.692
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528410.005	0.692
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528410.005	0.719
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528410.005	0.715
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528410.005	0.689
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282830.002	1528410.005	0.678
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282860.002	1528410.005	0.652
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528380.005	0.720
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528380.005	0.547
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528380.005	0.676
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1528380.005	0.537
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1528380.005	0.556
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1528380.005	0.704
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528380.005	0.684
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528380.005	0.719
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528380.005	0.706
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528380.005	0.694
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282830.002	1528380.005	0.685
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282110.002	1528350.005	0.609
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528350.005	0.734

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528350.005	0.618
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528350.005	0.607
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1528350.005	0.543
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1528350.005	0.605
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528350.005	0.726
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528350.005	0.807
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528350.005	0.707
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282830.002	1528350.005	0.680
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282110.002	1528320.005	0.532
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282140.002	1528320.005	0.603
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528320.005	0.712
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528320.005	0.685
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528320.005	0.605
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1528320.005	0.621
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1528320.005	0.711
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282500.002	1528320.005	0.610
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282530.002	1528320.005	0.544
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528320.005	0.741
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528320.005	0.723
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528320.005	0.693
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528290.005	0.636
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528290.005	0.555
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1528290.005	0.618
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1528290.005	0.728
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282500.002	1528290.005	0.615
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282530.002	1528290.005	0.610
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282560.002	1528290.005	0.552
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528290.005	0.738
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528290.005	0.685
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528290.005	0.709
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282800.002	1528290.005	0.692
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528260.005	0.648
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528260.005	0.558
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282500.002	1528260.005	0.622
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282530.002	1528260.005	0.611
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528260.005	0.741
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528260.005	0.689
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528260.005	0.616
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1528230.005	0.742
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528230.005	0.626
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528230.005	0.563
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282530.002	1528230.005	0.613
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528230.005	0.738
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528230.005	0.639
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282770.002	1528230.005	0.573
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528200.005	0.607
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528200.005	0.694
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1528200.005	0.744
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528200.005	0.655
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528200.005	0.570
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1528200.005	0.737

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528200.005	0.568
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282200.002	1528170.005	0.550
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282260.002	1528170.005	0.558
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528170.005	0.751
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528170.005	0.579
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1528140.005	0.560
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282290.002	1528140.005	0.568
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528140.005	0.705
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528140.005	0.625
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528110.005	0.633
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1528110.005	0.626
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1528080.005	0.639
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282740.002	1528080.005	0.589
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282230.002	1527990.005	0.588
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282290.002	1527990.005	0.713
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332510.002	1527990.005	0.328
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282290.002	1527960.005	0.572
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282320.002	1527960.005	0.580
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1527960.005	0.636
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282320.002	1527930.005	0.566
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1527930.005	0.565
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332420.002	1527930.005	0.302
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332000.002	1527900.005	0.274
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332030.002	1527900.005	0.305
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332360.002	1527900.005	0.339
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332390.002	1527900.005	0.329
4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	59	500	NC	1332420.002	1527900.005	0.255
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282320.002	1527810.005	0.572
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282350.002	1527810.005	0.649
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1527810.005	0.712
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1527810.005	0.714
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1527810.005	0.714
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1527810.005	0.672
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282380.002	1527780.005	0.577
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1527780.005	0.580
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1527780.005	0.581
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1527780.005	0.585
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282500.002	1527780.005	0.592
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282530.002	1527780.005	0.668
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282560.002	1527780.005	0.672
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282410.002	1527750.005	0.538
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282440.002	1527750.005	0.572
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282470.002	1527750.005	0.572
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282500.002	1527750.005	0.574
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282530.002	1527750.005	0.581
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282560.002	1527750.005	0.640
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282590.002	1527720.005	0.600
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282620.002	1527720.005	0.656
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282650.002	1527720.005	0.658
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1527720.005	0.664
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282710.002	1527720.005	0.674

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22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282590.002	1527690.005	0.581
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282620.002	1527690.005	0.584
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282650.002	1527690.005	0.584
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282680.002	1527690.005	0.645
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282650.002	1527660.005	0.484
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321560.002	1526760.005	0.186
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321650.002	1526670.005	0.332
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321680.002	1526670.005	0.302
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321620.002	1526640.005	0.270
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321650.002	1526640.005	0.260
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321680.002	1526640.005	0.263
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321710.002	1526640.005	0.334
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321530.002	1526610.005	0.218
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321560.002	1526610.005	0.220
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321590.002	1526610.005	0.271
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321620.002	1526610.005	0.335
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321740.002	1526610.005	0.334
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282650.592	1527514.316	0.555
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282542.034	1528156.343	0.626
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282118.265	1528152.725	0.548
22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	227	2000	NC	1282736.134	1527882.367	0.556
36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	308	2000	NC	1321608.517	1526714.568	0.270
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293150.002	1521600.005	0.835
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293180.002	1521600.005	0.829
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293120.002	1521570.005	0.830
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293150.002	1521570.005	0.824
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293120.002	1521540.005	0.820
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293390.002	1521510.005	0.617
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293420.002	1521510.005	0.653
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293390.002	1521480.005	0.606
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293690.002	1521300.005	0.652
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293690.002	1521270.005	0.643
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293660.002	1521240.005	0.650
28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	291	99	NC	1293660.002	1521210.005	0.646
20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	77	1000	NC	1298790.002	1521150.005	0.413
20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	77	1000	NC	1298790.002	1521120.005	0.490
20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	77	1000	NC	1298760.002	1521090.005	0.516
20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	77	1000	NC	1298490.002	1521000.005	0.752
20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	77	1000	NC	1298520.002	1521000.005	0.762
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354590.002	1520610.005	0.110
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354620.002	1520610.005	0.110
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354560.002	1520580.005	0.112
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354590.002	1520580.005	0.102
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354620.002	1520580.005	0.102
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354650.002	1520580.005	0.114
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354560.002	1520550.005	0.087
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354590.002	1520550.005	0.050
35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	306	99	NC	1354620.002	1520550.005	0.066
37929		321											1295700.002	1520370.005	0.661
37929		321											1295760.002	1520370.005	0.159
37929		321											1295910.002	1520370.005	0.914

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
37929		321											1295940.002	1520370.005	0.914
37929		321											1295700.002	1520340.005	0.653
37929		321											1295760.002	1520340.005	0.155
37929		321											1295940.002	1520340.005	0.408
37929		321											1295970.002	1520340.005	0.396
37929		321											1295970.002	1520310.005	0.360
37929		321											1295880.002	1520280.005	0.128
34003	Hexastylis naniflora	300	Dwarf-flowered Heartleaf	2013-04	2013-04	2013-04	Current	D	2-High	300	99	NC	1336830.002	1520190.005	0.062
34003	Hexastylis naniflora	300	Dwarf-flowered Heartleaf	2013-04	2013-04	2013-04	Current	D	2-High	300	99	NC	1336800.002	1520160.005	0.063
34003	Hexastylis naniflora	300	Dwarf-flowered Heartleaf	2013-04	2013-04	2013-04	Current	D	2-High	300	99	NC	1336830.002	1520160.005	0.194
37929		321											1296510.002	1520040.005	0.674
37929		321											1296510.002	1520010.005	0.734
37929		321											1296510.002	1519980.005	0.310
37929		321											1296540.002	1519980.005	0.732
37929		321											1295426.793	1520604.93	0.194
37929		321											1295593.69	1520610.39	0.244
37929		321											1295624.527	1520617.147	0.813
37216	Hexastylis naniflora	317	Dwarf-flowered Heartleaf	2017-05-02	2017-05-02	2016-05-05	Current	D	2-High	317	99	NC	1311120.002	1518540.005	0.228
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298910.002	1518240.005	0.128
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298850.002	1518210.005	0.097
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298880.002	1518210.005	0.167
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298910.002	1518210.005	0.127
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298940.002	1518210.005	0.124
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298820.002	1518180.005	0.097
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298850.002	1518180.005	0.265
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298880.002	1518180.005	0.604
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298910.002	1518180.005	0.120
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298940.002	1518180.005	0.102
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298820.002	1518150.005	0.287
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298850.002	1518150.005	0.260
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298880.002	1518150.005	0.583
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298790.002	1518120.005	0.697
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298820.002	1518120.005	0.286
12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	44	1000	NC	1298700.002	1518030.005	0.697
37214	Hexastylis naniflora	315	Dwarf-flowered Heartleaf	2017-05-02	2017-05-02	2016-05-05	Current	D	2-High	316	1000	NC	1310880.002	1517040.005	0.733
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516770.005	0.193
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516740.005	0.683
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516740.005	0.683
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516740.005	0.671
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311870.002	1516740.005	0.388
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311900.002	1516740.005	0.374
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516740.005	0.203
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516710.005	0.691
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516710.005	0.679
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516710.005	0.675
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311870.002	1516710.005	0.371
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311900.002	1516710.005	0.379
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516710.005	0.394
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311960.002	1516710.005	0.762
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516680.005	0.683
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516680.005	0.685

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516680.005	0.389
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311870.002	1516680.005	0.396
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311900.002	1516680.005	0.389
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516680.005	0.654
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311960.002	1516680.005	0.668
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311660.002	1516650.005	0.897
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516650.005	0.775
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516650.005	0.773
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516650.005	0.739
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311870.002	1516650.005	0.474
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311900.002	1516650.005	0.824
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516650.005	0.715
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311960.002	1516650.005	0.758
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311690.002	1516620.005	0.783
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311720.002	1516620.005	0.898
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311750.002	1516620.005	0.790
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516620.005	0.783
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516620.005	0.893
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516620.005	0.858
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311870.002	1516620.005	0.858
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311900.002	1516620.005	0.857
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516620.005	0.800
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311720.002	1516590.005	0.819
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311750.002	1516590.005	0.900
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516590.005	0.897
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516590.005	0.895
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516590.005	0.894
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311870.002	1516590.005	0.894
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311900.002	1516590.005	0.892
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311930.002	1516590.005	0.798
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311750.002	1516560.005	0.309
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516560.005	0.314
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311810.002	1516560.005	0.863
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311840.002	1516560.005	0.869
25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	316	1000	NC	1311780.002	1516530.005	0.301
26004	Hexastylis naniflora	275	Dwarf-flowered Heartleaf	2014-05-21	2014-05-21	2007-04-17	Current	C	2-High	275	500	NC	1337100.002	1513560.005	0.115
26004	Hexastylis naniflora	275	Dwarf-flowered Heartleaf	2014-05-21	2014-05-21	2007-04-17	Current	C	2-High	275	500	NC	1337130.002	1513560.005	0.101
26004	Hexastylis naniflora	275	Dwarf-flowered Heartleaf	2014-05-21	2014-05-21	2007-04-17	Current	C	2-High	275	500	NC	1337160.002	1513560.005	0.081
36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1304970.002	1512810.005	0.606
36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305000.002	1512780.005	0.618
8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	295	500	NC	1305690.002	1512750.005	0.128
8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	295	500	NC	1305720.002	1512750.005	0.070
36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1304970.002	1512720.005	0.177
8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	295	500	NC	1305660.002	1512720.005	0.131
8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	295	500	NC	1305690.002	1512720.005	0.069
36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1304970.002	1512690.005	0.175
8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	295	500	NC	1305660.002	1512690.005	0.129
30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	295	500	NC	1305960.002	1512690.005	0.223
30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	295	500	NC	1305990.002	1512690.005	0.220
8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	295	500	NC	1305660.002	1512660.005	0.124
30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	295	500	NC	1305960.002	1512660.005	0.118

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	295	500	NC	1305990.002	1512660.005	0.222
30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	295	500	NC	1306020.002	1512660.005	0.212
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305750.002	1511730.005	0.537
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305780.002	1511730.005	0.870
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305750.002	1511700.005	0.638
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305780.002	1511700.005	0.837
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305750.002	1511670.005	0.676
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305780.002	1511670.005	0.859
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305810.002	1511670.005	0.711
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305750.002	1511640.005	0.665
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305780.002	1511640.005	0.829
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305810.002	1511640.005	0.673
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305780.002	1511610.005	0.851
36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	295	500	NC	1305810.002	1511580.005	0.662
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289850.002	1511520.005	0.752
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289880.002	1511520.005	0.736
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289730.002	1511490.005	0.743
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289760.002	1511490.005	0.745
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289790.002	1511490.005	0.745
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289820.002	1511490.005	0.704
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289730.002	1511460.005	0.721
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289760.002	1511460.005	0.731
22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	178	2000	NC	1290630.002	1511430.005	0.656
22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	178	2000	NC	1290660.002	1511430.005	0.779
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289100.002	1511400.005	0.751
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289520.002	1511400.005	0.823
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289550.002	1511400.005	0.724
22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	178	2000	NC	1290630.002	1511400.005	0.657
22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	178	2000	NC	1290660.002	1511400.005	0.708
22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	178	2000	NC	1290720.002	1511400.005	0.858
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289070.002	1511370.005	0.736
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289100.002	1511370.005	0.837
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289490.002	1511370.005	0.823
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289520.002	1511370.005	0.728
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289610.002	1511370.005	0.904
22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	178	2000	NC	1290600.002	1511370.005	0.631
22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	178	2000	NC	1290720.002	1511370.005	0.858
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289040.002	1511340.005	0.889
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289070.002	1511340.005	0.729
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289100.002	1511340.005	0.725
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289460.002	1511340.005	0.830
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289490.002	1511340.005	0.729
22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	178	2000	NC	1290720.002	1511340.005	0.857
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289010.002	1511310.005	0.911
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289040.002	1511310.005	0.743
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289070.002	1511310.005	0.721
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289310.002	1511310.005	0.849
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289430.002	1511310.005	0.759
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289460.002	1511310.005	0.733
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289490.002	1511310.005	0.763
22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	178	2000	NC	1290360.002	1511310.005	0.902

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	178	2000	NC	1290390.002	1511310.005	0.878
22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	178	2000	NC	1290420.002	1511310.005	0.899
22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	178	2000	NC	1290450.002	1511310.005	0.625
22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	178	2000	NC	1290720.002	1511310.005	0.758
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288980.002	1511280.005	0.845
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289010.002	1511280.005	0.798
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289040.002	1511280.005	0.741
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289460.002	1511280.005	0.781
22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	178	2000	NC	1290360.002	1511280.005	0.510
22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	178	2000	NC	1290390.002	1511280.005	0.818
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288980.002	1511250.005	0.819
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289010.002	1511250.005	0.869
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288980.002	1511220.005	0.871
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289610.002	1511220.005	0.897
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288980.002	1511190.005	0.785
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1511130.005	0.884
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1511130.005	0.827
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288920.002	1511130.005	0.701
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289550.002	1511130.005	0.808
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1511130.005	0.785
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292520.002	1511130.005	0.787
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288830.002	1511100.005	0.812
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1511100.005	0.901
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1511100.005	0.789
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288920.002	1511100.005	0.706
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288950.002	1511100.005	0.773
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289550.002	1511100.005	0.803
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292460.002	1511100.005	0.782
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1511100.005	0.780
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292520.002	1511100.005	0.778
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292550.002	1511100.005	0.790
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292610.002	1511100.005	0.782
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292640.002	1511100.005	0.791
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292670.002	1511100.005	0.791
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292700.002	1511100.005	0.793
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288830.002	1511070.005	0.915
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1511070.005	0.864
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1511070.005	0.720
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288920.002	1511070.005	0.678
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288950.002	1511070.005	0.759
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292400.002	1511070.005	0.777
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292430.002	1511070.005	0.775
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292460.002	1511070.005	0.742
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1511070.005	0.684
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292550.002	1511070.005	0.683
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292580.002	1511070.005	0.782
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292610.002	1511070.005	0.786
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292640.002	1511070.005	0.786
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292670.002	1511070.005	0.791
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292700.002	1511070.005	0.801
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292730.002	1511070.005	0.800

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1511040.005	0.914
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288830.002	1511040.005	0.882
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1511040.005	0.803
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1511040.005	0.695
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292400.002	1511040.005	0.770
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292460.002	1511040.005	0.662
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292580.002	1511040.005	0.726
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292610.002	1511040.005	0.728
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292640.002	1511040.005	0.673
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292670.002	1511040.005	0.676
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292700.002	1511040.005	0.791
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292730.002	1511040.005	0.798
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292760.002	1511040.005	0.803
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1511040.005	0.796
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1511010.005	0.856
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288620.002	1511010.005	0.829
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288830.002	1511010.005	0.880
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1511010.005	0.819
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1511010.005	0.690
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292730.002	1511010.005	0.793
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292760.002	1511010.005	0.821
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1511010.005	0.808
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1511010.005	0.800
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288560.002	1510980.005	0.922
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1510980.005	0.847
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288620.002	1510980.005	0.795
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1510980.005	0.826
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1510980.005	0.709
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289430.002	1510980.005	0.806
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292760.002	1510980.005	0.763
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510980.005	0.818
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510980.005	0.817
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510980.005	0.812
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510980.005	0.828
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510980.005	0.808
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510980.005	0.242
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288530.002	1510950.005	0.923
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288560.002	1510950.005	0.916
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1510950.005	0.850
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288620.002	1510950.005	0.906
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288860.002	1510950.005	0.904
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1510950.005	0.766
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510950.005	0.793
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510950.005	0.805
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510950.005	0.815
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510950.005	0.822
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510950.005	0.823
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510950.005	0.826
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510950.005	0.832
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510950.005	0.815
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510950.005	0.725

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510950.005	0.732
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510950.005	0.850
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288500.002	1510920.005	0.920
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288530.002	1510920.005	0.884
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288560.002	1510920.005	0.851
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1510920.005	0.850
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288620.002	1510920.005	0.880
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288890.002	1510920.005	0.898
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289460.002	1510920.005	0.766
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510920.005	0.720
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510920.005	0.810
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510920.005	0.743
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510920.005	0.733
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510920.005	0.735
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510920.005	0.660
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510920.005	0.661
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510920.005	0.668
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510920.005	0.818
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288500.002	1510890.005	0.918
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288530.002	1510890.005	0.854
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288560.002	1510890.005	0.806
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1510890.005	0.845
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288620.002	1510890.005	0.879
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510890.005	0.691
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510890.005	0.705
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510890.005	0.660
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510890.005	0.704
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510890.005	0.808
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288470.002	1510860.005	0.919
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288500.002	1510860.005	0.919
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288530.002	1510860.005	0.809
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288560.002	1510860.005	0.785
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288590.002	1510860.005	0.823
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510860.005	0.727
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510860.005	0.843
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288470.002	1510830.005	0.922
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288500.002	1510830.005	0.913
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288530.002	1510830.005	0.804
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289340.002	1510830.005	0.877
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510830.005	0.825
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510830.005	0.839
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288500.002	1510800.005	0.918
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1289310.002	1510800.005	0.882
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510800.005	0.704
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510800.005	0.790
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510800.005	0.832
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1288500.002	1510770.005	0.856
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510770.005	0.689
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510770.005	0.700
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510770.005	0.730
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293240.002	1510710.005	0.834

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510650.005	0.706
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288620.002	1510620.005	0.886
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288650.002	1510620.005	0.881
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1510620.005	0.882
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510620.005	0.842
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1510620.005	0.805
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510620.005	0.828
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510620.005	0.830
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510620.005	0.792
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288620.002	1510590.005	0.691
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288650.002	1510590.005	0.685
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1510590.005	0.865
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510590.005	0.877
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510590.005	0.877
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1510590.005	0.753
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292520.002	1510590.005	0.794
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292700.002	1510590.005	0.812
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292730.002	1510590.005	0.808
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292760.002	1510590.005	0.818
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510590.005	0.820
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510590.005	0.817
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510590.005	0.792
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510590.005	0.787
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510590.005	0.830
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1510560.005	0.772
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510560.005	0.776
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510560.005	0.871
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510560.005	0.874
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292550.002	1510560.005	0.810
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292700.002	1510560.005	0.774
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292730.002	1510560.005	0.667
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292760.002	1510560.005	0.726
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510560.005	0.661
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510560.005	0.706
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510560.005	0.706
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510560.005	0.828
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510560.005	0.840
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510560.005	0.835
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510560.005	0.830
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510560.005	0.828
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510560.005	0.735
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510560.005	0.806
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510530.005	0.464
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510530.005	0.772
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510530.005	0.837
28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288800.002	1510530.005	0.875
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1510530.005	0.805
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1510530.005	0.857
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289940.002	1510530.005	0.813
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1510530.005	0.815
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510530.005	0.899

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510530.005	0.638
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510530.005	0.657
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510530.005	0.780
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510530.005	0.830
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510530.005	0.830
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510530.005	0.741
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510530.005	0.745
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510530.005	0.817
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510530.005	0.721
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510530.005	0.711
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510530.005	0.728
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510530.005	0.704
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510530.005	0.708
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510530.005	0.776
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293240.002	1510530.005	0.827
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293270.002	1510530.005	0.810
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293300.002	1510530.005	0.805
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293360.002	1510530.005	0.805
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293390.002	1510530.005	0.801
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293420.002	1510530.005	0.796
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293450.002	1510530.005	0.793
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293480.002	1510530.005	0.791
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293510.002	1510530.005	0.782
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510500.005	0.786
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510500.005	0.821
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289670.002	1510500.005	0.735
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1510500.005	0.719
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1510500.005	0.838
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1510500.005	0.809
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1510500.005	0.854
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1510500.005	0.804
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289940.002	1510500.005	0.799
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1510500.005	0.707
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510500.005	0.700
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510500.005	0.702
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510500.005	0.817
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510500.005	0.830
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510500.005	0.822
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510500.005	0.817
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510500.005	0.618
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510500.005	0.669
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510500.005	0.665
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510500.005	0.663
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510500.005	0.695
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510500.005	0.589
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510500.005	0.586
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510500.005	0.586
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510500.005	0.611
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293240.002	1510500.005	0.813
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293270.002	1510500.005	0.825
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293300.002	1510500.005	0.815

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293330.002	1510500.005	0.814
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293360.002	1510500.005	0.805
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293390.002	1510500.005	0.798
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293420.002	1510500.005	0.793
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293450.002	1510500.005	0.786
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293480.002	1510500.005	0.784
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293510.002	1510500.005	0.748
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293540.002	1510500.005	0.797
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293570.002	1510500.005	0.788
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293600.002	1510500.005	0.724
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510470.005	0.716
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510470.005	0.747
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510470.005	0.751
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289670.002	1510470.005	0.745
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1510470.005	0.355
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1510470.005	0.756
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1510470.005	0.718
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1510470.005	0.705
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1510470.005	0.794
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292520.002	1510470.005	0.798
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510470.005	0.810
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510470.005	0.833
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510470.005	0.829
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510470.005	0.696
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510470.005	0.692
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510470.005	0.675
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510470.005	0.669
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510470.005	0.659
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510470.005	0.655
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510470.005	0.715
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510470.005	0.586
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293240.002	1510470.005	0.714
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293270.002	1510470.005	0.805
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293300.002	1510470.005	0.806
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293330.002	1510470.005	0.722
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293360.002	1510470.005	0.773
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293390.002	1510470.005	0.764
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293420.002	1510470.005	0.814
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293450.002	1510470.005	0.777
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293480.002	1510470.005	0.710
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293510.002	1510470.005	0.714
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293540.002	1510470.005	0.745
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293570.002	1510470.005	0.724
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293600.002	1510470.005	0.721
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1510440.005	0.828
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510440.005	0.730
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510440.005	0.745
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510440.005	0.648
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292370.002	1510440.005	0.760
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292400.002	1510440.005	0.786
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292490.002	1510440.005	0.794

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510440.005	0.786
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510440.005	0.773
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510440.005	0.814
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510440.005	0.834
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510440.005	0.727
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510440.005	0.687
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293270.002	1510440.005	0.756
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293300.002	1510440.005	0.760
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293330.002	1510440.005	0.764
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293360.002	1510440.005	0.749
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293390.002	1510440.005	0.745
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293420.002	1510440.005	0.743
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293450.002	1510440.005	0.766
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293480.002	1510440.005	0.757
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293510.002	1510440.005	0.742
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293540.002	1510440.005	0.738
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293570.002	1510440.005	0.719
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1510410.005	0.823
28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510410.005	0.649
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292460.002	1510410.005	0.788
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510410.005	0.744
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510410.005	0.767
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510410.005	0.780
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510410.005	0.720
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510410.005	0.683
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510410.005	0.794
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510410.005	0.733
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510410.005	0.720
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510410.005	0.683
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293300.002	1510410.005	0.743
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293330.002	1510410.005	0.743
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293360.002	1510410.005	0.754
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293390.002	1510410.005	0.738
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293420.002	1510410.005	0.749
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293450.002	1510410.005	0.830
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293480.002	1510410.005	0.799
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293510.002	1510410.005	0.680
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293540.002	1510410.005	0.684
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290840.002	1510380.005	0.765
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510380.005	0.742
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510380.005	0.758
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510380.005	0.771
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510380.005	0.711
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510380.005	0.669
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510380.005	0.720
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510380.005	0.741
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510380.005	0.752
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510380.005	0.728
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510380.005	0.773
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510380.005	0.730
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510380.005	0.768

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293420.002	1510380.005	0.735
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293450.002	1510380.005	0.793
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293480.002	1510380.005	0.797
28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	178	2000	NC	1290450.002	1510350.005	0.582
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290570.002	1510350.005	0.790
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290600.002	1510350.005	0.827
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290630.002	1510350.005	0.766
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290810.002	1510350.005	0.707
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290840.002	1510350.005	0.705
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290870.002	1510350.005	0.755
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290900.002	1510350.005	0.757
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290930.002	1510350.005	0.687
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292790.002	1510350.005	0.749
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292820.002	1510350.005	0.755
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510350.005	0.742
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510350.005	0.747
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510350.005	0.690
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510350.005	0.694
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510350.005	0.706
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510350.005	0.728
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510350.005	0.804
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293090.002	1510350.005	0.722
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510350.005	0.778
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510350.005	0.613
28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	178	2000	NC	1290360.002	1510320.005	0.812
28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	178	2000	NC	1290390.002	1510320.005	0.811
28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	178	2000	NC	1290420.002	1510320.005	0.804
28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	178	2000	NC	1290450.002	1510320.005	0.738
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290540.002	1510320.005	0.741
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290570.002	1510320.005	0.832
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290600.002	1510320.005	0.770
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290630.002	1510320.005	0.672
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290810.002	1510320.005	0.692
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290840.002	1510320.005	0.685
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290870.002	1510320.005	0.684
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290900.002	1510320.005	0.680
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290930.002	1510320.005	0.340
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290960.002	1510320.005	0.342
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290990.002	1510320.005	0.340
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292850.002	1510320.005	0.733
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292880.002	1510320.005	0.738
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292910.002	1510320.005	0.740
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510320.005	0.747
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510320.005	0.696
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510320.005	0.706
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510320.005	0.721
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510320.005	0.832
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293120.002	1510320.005	0.823
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510320.005	0.679
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510320.005	0.611
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290480.002	1510290.005	0.857

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290510.002	1510290.005	0.728
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290540.002	1510290.005	0.826
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290570.002	1510290.005	0.778
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290600.002	1510290.005	0.770
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290810.002	1510290.005	0.691
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290840.002	1510290.005	0.684
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292940.002	1510290.005	0.742
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1292970.002	1510290.005	0.693
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293000.002	1510290.005	0.698
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510290.005	0.713
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510290.005	0.751
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510290.005	0.726
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510290.005	0.617
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293330.002	1510290.005	0.701
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293360.002	1510290.005	0.737
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293390.002	1510290.005	0.375
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290450.002	1510260.005	0.858
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290480.002	1510260.005	0.764
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290510.002	1510260.005	0.857
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290540.002	1510260.005	0.836
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290570.002	1510260.005	0.738
21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	178	2000	NC	1290810.002	1510260.005	0.343
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510260.005	0.416
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510260.005	0.526
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510260.005	0.820
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510260.005	0.783
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510260.005	0.724
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293240.002	1510260.005	0.722
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293270.002	1510260.005	0.702
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293300.002	1510260.005	0.752
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1510230.005	0.805
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510230.005	0.805
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290420.002	1510230.005	0.772
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290450.002	1510230.005	0.768
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290480.002	1510230.005	0.856
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290510.002	1510230.005	0.868
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290540.002	1510230.005	0.783
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293030.002	1510230.005	0.729
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293060.002	1510230.005	0.826
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293150.002	1510230.005	0.820
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293180.002	1510230.005	0.780
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293210.002	1510230.005	0.726
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288860.002	1510200.005	0.851
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1510200.005	0.881
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1510200.005	0.886
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1510200.005	0.884
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1510200.005	0.883
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1510200.005	0.802
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289940.002	1510200.005	0.791
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1510200.005	0.791
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510200.005	0.699

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290030.002	1510200.005	0.835
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290420.002	1510200.005	0.763
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290450.002	1510200.005	0.853
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290480.002	1510200.005	0.819
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290510.002	1510200.005	0.828
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288800.002	1510170.005	0.853
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288830.002	1510170.005	0.812
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510170.005	0.881
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510170.005	0.885
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510170.005	0.886
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289670.002	1510170.005	0.889
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289700.002	1510170.005	0.889
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289730.002	1510170.005	0.888
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289760.002	1510170.005	0.898
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1510170.005	0.886
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1510170.005	0.870
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1510170.005	0.847
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1510170.005	
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1510170.005	0.697
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289940.002	1510170.005	0.741
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1510170.005	0.739
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510170.005	0.828
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290030.002	1510170.005	0.737
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290450.002	1510170.005	0.826
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290480.002	1510170.005	0.896
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290510.002	1510170.005	0.764
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510140.005	0.859
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288800.002	1510140.005	0.853
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1510140.005	0.682
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289460.002	1510140.005	0.682
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289490.002	1510140.005	0.786
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1510140.005	0.881
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1510140.005	0.884
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510140.005	0.883
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510140.005	0.885
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510140.005	0.853
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289670.002	1510140.005	0.803
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289700.002	1510140.005	0.803
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289730.002	1510140.005	0.793
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289760.002	1510140.005	0.882
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1510140.005	0.879
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290450.002	1510140.005	0.898
21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	178	2000	NC	1290480.002	1510140.005	0.862
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510110.005	0.790
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510110.005	0.862
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289370.002	1510110.005	0.352
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289400.002	1510110.005	0.682
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1510110.005	0.872
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289460.002	1510110.005	0.874
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289490.002	1510110.005	0.879
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1510110.005	0.877

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1510110.005	0.879
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510110.005	0.797
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510110.005	0.879
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510110.005	0.790
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289670.002	1510110.005	0.784
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510080.005	0.865
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510080.005	0.868
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510080.005	0.856
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288860.002	1510080.005	0.826
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288890.002	1510080.005	0.851
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289310.002	1510080.005	0.426
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289340.002	1510080.005	0.813
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289370.002	1510080.005	0.838
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289400.002	1510080.005	0.843
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1510080.005	0.874
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289460.002	1510080.005	0.787
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289490.002	1510080.005	0.678
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1510080.005	0.676
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510080.005	0.797
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510080.005	0.698
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289640.002	1510080.005	0.777
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1510050.005	0.591
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510050.005	0.872
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510050.005	0.868
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510050.005	0.863
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288800.002	1510050.005	0.860
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288830.002	1510050.005	0.860
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288860.002	1510050.005	0.854
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288890.002	1510050.005	0.848
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288920.002	1510050.005	0.845
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289280.002	1510050.005	0.748
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289310.002	1510050.005	0.752
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289340.002	1510050.005	0.873
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289370.002	1510050.005	0.839
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289400.002	1510050.005	0.876
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1510050.005	0.828
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1510050.005	0.799
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510050.005	0.759
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510050.005	0.680
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510050.005	0.729
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290030.002	1510050.005	0.679
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290060.002	1510050.005	0.696
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288650.002	1510020.005	0.887
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1510020.005	0.885
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1510020.005	0.865
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1510020.005	0.856
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1510020.005	0.856
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288800.002	1510020.005	0.853
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288830.002	1510020.005	0.853
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288860.002	1510020.005	0.851
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288890.002	1510020.005	0.775

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288920.002	1510020.005	0.723
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289250.002	1510020.005	0.747
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289280.002	1510020.005	0.744
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289310.002	1510020.005	0.744
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289340.002	1510020.005	0.865
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1510020.005	0.874
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1510020.005	0.874
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289610.002	1510020.005	0.682
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289730.002	1510020.005	0.846
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289760.002	1510020.005	0.847
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1510020.005	0.801
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1510020.005	0.710
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1510020.005	0.794
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1510020.005	0.799
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1510020.005	0.804
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289940.002	1510020.005	0.806
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1510020.005	0.807
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1510020.005	0.809
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290030.002	1510020.005	0.766
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290060.002	1510020.005	0.750
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290090.002	1510020.005	0.844
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288620.002	1509990.005	0.893
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288650.002	1509990.005	0.865
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1509990.005	0.793
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1509990.005	0.767
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288740.002	1509990.005	0.755
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288770.002	1509990.005	0.707
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288800.002	1509990.005	0.704
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288830.002	1509990.005	0.763
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289280.002	1509990.005	0.635
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1509990.005	0.907
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1509990.005	0.876
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1509990.005	0.868
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289730.002	1509990.005	0.839
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289760.002	1509990.005	0.794
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1509990.005	0.795
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1509990.005	0.797
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1509990.005	0.801
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1509990.005	0.806
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289910.002	1509990.005	0.887
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289940.002	1509990.005	0.812
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289970.002	1509990.005	0.816
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290000.002	1509990.005	0.801
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1290030.002	1509990.005	0.785
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288620.002	1509960.005	0.886
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288650.002	1509960.005	0.796
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288680.002	1509960.005	0.767
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288710.002	1509960.005	0.753
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289460.002	1509960.005	0.825
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289490.002	1509960.005	0.886
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1509960.005	0.874

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1509960.005	0.862
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289580.002	1509960.005	0.776
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289760.002	1509960.005	0.788
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289790.002	1509960.005	0.853
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289820.002	1509960.005	0.803
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289850.002	1509960.005	0.801
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289880.002	1509960.005	0.797
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288620.002	1509930.005	0.813
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1288650.002	1509930.005	0.771
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1509930.005	0.901
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289460.002	1509930.005	0.865
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289490.002	1509930.005	0.871
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1509930.005	0.877
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289550.002	1509930.005	0.802
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289370.002	1509900.005	0.879
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289400.002	1509900.005	0.872
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1509900.005	0.872
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289460.002	1509900.005	0.864
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289490.002	1509900.005	0.864
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289520.002	1509900.005	0.842
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289340.002	1509870.005	0.859
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289370.002	1509870.005	0.869
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289400.002	1509870.005	0.865
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289430.002	1509870.005	0.833
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289310.002	1509840.005	0.732
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289340.002	1509840.005	0.863
28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289370.002	1509840.005	0.863
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289070.002	1509780.005	0.682
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289100.002	1509780.005	0.684
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289040.002	1509750.005	0.721
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289070.002	1509750.005	0.721
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289100.002	1509750.005	0.714
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289130.002	1509750.005	0.675
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289160.002	1509750.005	0.712
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289190.002	1509750.005	0.712
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289040.002	1509720.005	0.746
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289070.002	1509720.005	0.743
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289100.002	1509720.005	0.836
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289130.002	1509720.005	0.653
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289160.002	1509720.005	0.621
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289040.002	1509690.005	0.870
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289070.002	1509690.005	0.778
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289100.002	1509690.005	0.756
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289130.002	1509690.005	0.605
28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	178	2000	NC	1289160.002	1509690.005	0.602
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315590.002	1509420.005	0.547
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315560.002	1509390.005	0.549
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315590.002	1509390.005	0.551
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315530.002	1509360.005	0.554
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315560.002	1509360.005	0.558
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315530.002	1509330.005	0.558

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315440.002	1509270.005	0.374
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315470.002	1509270.005	0.385
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315500.002	1509270.005	0.389
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315440.002	1509240.005	0.457
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315470.002	1509240.005	0.471
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315500.002	1509240.005	0.506
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315440.002	1509210.005	0.611
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315470.002	1509210.005	0.607
14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	179	2000	NC	1315500.002	1509210.005	0.603
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290780.002	1509180.005	0.158
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290810.002	1509180.005	0.814
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290840.002	1509180.005	0.754
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290870.002	1509180.005	0.691
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290900.002	1509180.005	0.668
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290930.002	1509180.005	0.768
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290780.002	1509150.005	0.167
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290810.002	1509150.005	0.461
36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	178	2000	NC	1290840.002	1509150.005	0.449
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313220.002	1508070.005	0.061
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313220.002	1508040.005	0.406
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313250.002	1508040.005	0.665
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313100.002	1507920.005	0.587
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313130.002	1507920.005	0.655
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313160.002	1507920.005	0.453
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313070.002	1507890.005	0.426
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313100.002	1507890.005	0.445
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313130.002	1507890.005	0.598
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313160.002	1507890.005	0.438
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313100.002	1507860.005	0.638
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313130.002	1507860.005	0.645
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1314810.002	1507860.005	0.741
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1314780.002	1507830.005	0.815
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1314810.002	1507830.005	0.733
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507650.005	0.406
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507650.005	0.702
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507650.005	0.408
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507650.005	0.769
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332150.002	1507650.005	0.773
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332180.002	1507650.005	0.773
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332210.002	1507650.005	0.773
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313760.002	1507620.005	0.189
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507620.005	0.646
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507620.005	0.604
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507620.005	0.608
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313880.002	1507620.005	0.405
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507620.005	0.767
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507620.005	0.777
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507620.005	0.773
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507620.005	0.771
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332150.002	1507620.005	0.766
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313760.002	1507590.005	0.167

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507590.005	0.579
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507590.005	0.596
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507590.005	0.598
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313880.002	1507590.005	0.697
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313910.002	1507590.005	0.698
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507590.005	0.766
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507590.005	0.771
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507590.005	0.771
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507590.005	0.764
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507590.005	0.734
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507590.005	0.678
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332150.002	1507590.005	0.663
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313730.002	1507560.005	0.193
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313760.002	1507560.005	0.590
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507560.005	0.592
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507560.005	0.691
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507560.005	0.691
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313880.002	1507560.005	0.745
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313910.002	1507560.005	0.745
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507560.005	0.768
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507560.005	0.769
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507560.005	0.718
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507560.005	0.721
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507560.005	0.729
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507560.005	0.638
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507560.005	0.660
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507560.005	0.655
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313760.002	1507530.005	0.737
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507530.005	0.687
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507530.005	0.773
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507530.005	0.774
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313880.002	1507530.005	0.743
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313910.002	1507530.005	0.689
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331880.002	1507530.005	0.768
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507530.005	0.718
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507530.005	0.688
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507530.005	0.697
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507530.005	0.692
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507530.005	0.624
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507530.005	0.654
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507530.005	0.656
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313760.002	1507500.005	0.733
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507500.005	0.683
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507500.005	0.735
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507500.005	0.737
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313880.002	1507500.005	0.739
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331880.002	1507500.005	0.734
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507500.005	0.772
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507500.005	0.642
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507500.005	0.626
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507500.005	0.620

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507500.005	0.618
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507500.005	0.616
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313790.002	1507470.005	0.733
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313820.002	1507470.005	0.735
20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	31	2000	NC	1313850.002	1507470.005	0.683
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331880.002	1507470.005	0.739
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507470.005	0.776
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507470.005	0.760
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507470.005	0.642
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507470.005	0.642
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507470.005	0.640
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507470.005	0.641
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507470.005	0.728
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332360.002	1507470.005	0.735
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331850.002	1507440.005	0.770
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331880.002	1507440.005	0.682
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507440.005	0.731
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507440.005	0.770
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507440.005	0.728
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507440.005	0.769
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507440.005	0.770
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507440.005	0.729
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507440.005	0.764
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507440.005	0.752
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332150.002	1507440.005	0.646
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332300.002	1507440.005	0.634
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295400.002	1507410.005	0.115
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295430.002	1507410.005	0.096
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295490.002	1507410.005	0.542
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295520.002	1507410.005	0.139
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331760.002	1507410.005	0.740
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331790.002	1507410.005	0.740
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331820.002	1507410.005	0.767
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331850.002	1507410.005	0.672
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331880.002	1507410.005	0.646
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507410.005	0.616
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507410.005	0.762
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507410.005	0.762
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507410.005	0.728
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507410.005	0.762
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507410.005	0.770
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507410.005	0.765
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507410.005	0.750
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332150.002	1507410.005	0.640
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332240.002	1507410.005	0.659
14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	29	2000	NC	1293676.469	1510541.206	0.373
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332295.953	1507578.747	0.186
21393	Hexastylis naniflora	162	Dwarf-flowered Heartleaf	2012-12-17	2012-12-17	2005-Fall	Current	D	2-High	179	2000	NC	1314527.879	1509098.456	0.188
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331730.002	1507380.005	0.651
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331850.002	1507380.005	0.655
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331880.002	1507380.005	0.602

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331910.002	1507380.005	0.644
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331940.002	1507380.005	0.672
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507380.005	0.732
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507380.005	0.729
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507380.005	0.671
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507380.005	0.768
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507380.005	0.771
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507380.005	0.659
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507350.005	0.668
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507350.005	0.684
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507350.005	0.728
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507350.005	0.766
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507350.005	0.763
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332120.002	1507350.005	0.662
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507320.005	0.140
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507320.005	0.676
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507320.005	0.770
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507320.005	0.726
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332090.002	1507320.005	0.670
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507290.005	0.175
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507290.005	0.765
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507290.005	0.771
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507290.005	0.721
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1331970.002	1507260.005	0.344
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507260.005	0.772
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507260.005	0.772
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332060.002	1507260.005	0.719
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332000.002	1507230.005	0.345
21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	96	2000	NC	1332030.002	1507230.005	0.753
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506840.005	0.378
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506840.005	0.380
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506840.005	0.307
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330620.002	1506810.005	0.380
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506810.005	0.380
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506810.005	0.382
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506810.005	0.347
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330740.002	1506810.005	0.307
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330620.002	1506780.005	0.689
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506780.005	0.745
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506780.005	0.347
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506780.005	0.375
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330740.002	1506780.005	0.377
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330770.002	1506780.005	0.375
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330590.002	1506750.005	0.570
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330620.002	1506750.005	0.572
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506750.005	0.502
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506750.005	0.679
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506750.005	0.780
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330740.002	1506750.005	0.749
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330770.002	1506750.005	0.350
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330590.002	1506720.005	0.085

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330620.002	1506720.005	0.411
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506720.005	0.413
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506720.005	0.567
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506720.005	0.609
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330740.002	1506720.005	0.611
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330770.002	1506720.005	0.380
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330620.002	1506690.005	0.565
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506690.005	0.567
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506690.005	0.607
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506690.005	0.623
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330740.002	1506690.005	0.613
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330650.002	1506660.005	0.569
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330680.002	1506660.005	0.617
9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	96	2000	NC	1330710.002	1506660.005	0.699
8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	96	2000	NC	1331970.002	1506570.005	0.494
8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	96	2000	NC	1331910.002	1506540.005	0.666
8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	96	2000	NC	1331940.002	1506540.005	0.573
8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	96	2000	NC	1331850.002	1506510.005	0.617
8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	96	2000	NC	1331880.002	1506510.005	0.579
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506330.005	0.741
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506330.005	0.792
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506330.005	0.768
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305330.002	1506300.005	0.655
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506300.005	0.792
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506300.005	0.802
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506300.005	0.823
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305450.002	1506300.005	0.814
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305300.002	1506270.005	0.221
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305330.002	1506270.005	0.509
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506270.005	0.565
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506270.005	0.716
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506270.005	0.808
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305450.002	1506270.005	0.829
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305300.002	1506240.005	0.242
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305330.002	1506240.005	0.532
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506240.005	0.530
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506240.005	0.686
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506240.005	0.712
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305450.002	1506240.005	0.305
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305480.002	1506240.005	0.828
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305300.002	1506210.005	0.203
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305330.002	1506210.005	0.198
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506210.005	0.515
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506210.005	0.526
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506210.005	0.702
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305450.002	1506210.005	0.808
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305330.002	1506180.005	0.201
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506180.005	0.201
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506180.005	0.526
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506180.005	0.536
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305450.002	1506180.005	0.719

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305360.002	1506150.005	0.526
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305390.002	1506150.005	0.528
14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	32	500	NC	1305420.002	1506150.005	0.532
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309530.002	1505130.005	0.741
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309530.002	1505100.005	0.235
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309560.002	1505100.005	0.241
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1505100.005	0.745
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309560.002	1505070.005	0.235
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1505070.005	0.768
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1505040.005	0.680
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1505010.005	0.768
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1504890.005	0.763
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309560.002	1504860.005	0.766
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1504860.005	0.761
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309560.002	1504830.005	0.766
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309590.002	1504830.005	0.757
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309530.002	1504800.005	0.765
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309560.002	1504800.005	0.719
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309470.002	1504770.005	0.483
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309500.002	1504770.005	0.481
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309530.002	1504770.005	0.607
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309440.002	1504740.005	0.612
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309470.002	1504740.005	0.500
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309500.002	1504740.005	0.498
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309830.002	1504650.005	0.727
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309860.002	1504650.005	0.492
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309890.002	1504650.005	0.789
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309770.002	1504620.005	0.246
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309800.002	1504620.005	0.729
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309830.002	1504620.005	0.488
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310100.002	1504440.005	0.690
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310010.002	1504410.005	0.797
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310040.002	1504410.005	0.789
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310070.002	1504410.005	0.660
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310100.002	1504410.005	0.595
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309950.002	1504380.005	0.543
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309980.002	1504380.005	0.644
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310010.002	1504380.005	0.747
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310040.002	1504380.005	0.679
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310070.002	1504380.005	0.597
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309920.002	1504350.005	0.515
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309950.002	1504350.005	0.595
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1309980.002	1504350.005	0.524
13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	252	500	NC	1310010.002	1504350.005	0.534
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295796.43	1507353.689	0.133
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295352.827	1507308.152	0.057
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295637.446	1507362.056	0.111
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295676.15	1507367.448	0.140
37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	318	500	NC	1295363.403	1507333.356	0.123
13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	252	500	NC	1311030.002	1503030.005	0.465
13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	252	500	NC	1311060.002	1503030.005	0.128

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	252	500	NC	1310910.002	1503000.005	0.753
13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	252	500	NC	1310940.002	1503000.005	0.788
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287180.002	1499340.005	0.238
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287150.002	1499310.005	0.265
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287180.002	1499310.005	0.316
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287120.002	1499280.005	0.456
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287150.002	1499280.005	0.378
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287540.002	1499280.005	0.657
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287090.002	1499250.005	0.360
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287120.002	1499250.005	0.368
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287390.002	1499250.005	0.725
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287420.002	1499250.005	0.803
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287510.002	1499250.005	0.810
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287060.002	1499220.005	0.646
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287360.002	1499220.005	0.807
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287390.002	1499220.005	0.744
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287420.002	1499220.005	0.715
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287540.002	1499220.005	0.513
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287060.002	1499190.005	0.175
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287300.002	1499190.005	0.342
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287330.002	1499190.005	0.083
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287360.002	1499190.005	0.748
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287390.002	1499190.005	0.746
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287420.002	1499190.005	0.638
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287450.002	1499190.005	0.636
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287540.002	1499190.005	0.633
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287300.002	1499160.005	0.391
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287390.002	1499160.005	0.512
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287420.002	1499160.005	0.412
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287570.002	1499160.005	0.637
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287600.002	1499160.005	0.184
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287630.002	1499160.005	0.672
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287330.002	1499130.005	0.623
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287360.002	1499130.005	0.805
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287390.002	1499130.005	0.634
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287420.002	1499130.005	0.816
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287570.002	1499130.005	0.633
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287630.002	1499130.005	0.727
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287420.002	1499100.005	0.629
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287600.002	1499100.005	0.544
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287630.002	1499070.005	0.435
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287660.002	1499070.005	0.817
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287630.002	1499040.005	0.547
21386	Hexastylis naniflora	158	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	2001-05-07	Current	D	2-High	158	500	NC	1300020.002	1498560.005	0.733
21386	Hexastylis naniflora	158	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	2001-05-07	Current	D	2-High	158	500	NC	1299960.002	1498530.005	0.789
21386	Hexastylis naniflora	158	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	2001-05-07	Current	D	2-High	158	500	NC	1300020.002	1498530.005	0.733
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285020.002	1496040.005	0.301
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285050.002	1496040.005	0.361
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1284990.002	1496010.005	0.274
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285020.002	1496010.005	0.178
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285050.002	1496010.005	0.274

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1284960.002	1495980.005	0.485
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1284990.002	1495980.005	0.372
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285020.002	1495980.005	0.461
35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	303	500	NC	1287491.3	1499319.491	0.732
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285530.002	1495800.005	0.609
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285500.002	1495770.005	0.747
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285530.002	1495770.005	0.715
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285560.002	1495770.005	0.674
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285590.002	1495770.005	0.682
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285500.002	1495740.005	0.726
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285530.002	1495740.005	0.674
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285560.002	1495740.005	0.520
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285590.002	1495740.005	0.561
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285560.002	1495710.005	0.626
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285590.002	1495710.005	0.571
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285620.002	1495710.005	0.560
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285590.002	1495680.005	0.684
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285620.002	1495680.005	0.566
35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	304	500	NC	1285620.002	1495650.005	0.670
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302540.002	1495590.005	0.781
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495590.005	0.645
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302510.002	1495560.005	0.774
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302540.002	1495560.005	0.661
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495560.005	0.684
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302600.002	1495560.005	0.672
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302480.002	1495530.005	0.777
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302510.002	1495530.005	0.668
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302540.002	1495530.005	0.651
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495530.005	0.738
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306440.002	1495530.005	0.647
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302450.002	1495500.005	0.764
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302480.002	1495500.005	0.713
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302510.002	1495500.005	0.687
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302540.002	1495500.005	0.728
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495500.005	0.747
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306470.002	1495500.005	0.655
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306500.002	1495500.005	0.603
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495500.005	0.914
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495500.005	0.913
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302420.002	1495470.005	0.840
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302450.002	1495470.005	0.857
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302480.002	1495470.005	0.762
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302510.002	1495470.005	0.730
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302540.002	1495470.005	0.722
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495470.005	0.626
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306530.002	1495470.005	0.698
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495470.005	0.920
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495470.005	0.891
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495440.005	0.844
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302420.002	1495440.005	0.860
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302450.002	1495440.005	0.861

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302480.002	1495440.005	0.828
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302510.002	1495440.005	0.710
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302540.002	1495440.005	0.588
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495440.005	0.630
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302600.002	1495440.005	0.656
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306350.002	1495440.005	0.679
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495440.005	0.920
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495440.005	0.891
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495410.005	0.845
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495410.005	0.852
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302420.002	1495410.005	0.857
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302450.002	1495410.005	0.761
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302480.002	1495410.005	0.710
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302510.002	1495410.005	0.701
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302570.002	1495410.005	0.607
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302600.002	1495410.005	0.652
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306380.002	1495410.005	0.686
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306410.002	1495410.005	0.684
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306440.002	1495410.005	0.649
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495410.005	0.891
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495410.005	0.822
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306620.002	1495410.005	0.840
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306650.002	1495410.005	0.256
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306680.002	1495410.005	0.219
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306710.002	1495410.005	0.217
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302270.002	1495380.005	0.803
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495380.005	0.833
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495380.005	0.840
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495380.005	0.851
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495380.005	0.855
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302420.002	1495380.005	0.771
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302450.002	1495380.005	0.708
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306530.002	1495380.005	0.888
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495380.005	0.890
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302180.002	1495350.005	0.669
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302210.002	1495350.005	0.796
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302240.002	1495350.005	0.801
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302270.002	1495350.005	0.837
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495350.005	0.810
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495350.005	0.822
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495350.005	0.849
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495350.005	0.815
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302420.002	1495350.005	0.708
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495350.005	0.601
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495320.005	0.822
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495320.005	0.848
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495320.005	0.760
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306530.002	1495320.005	0.661
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495290.005	0.833
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495290.005	0.851
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495290.005	0.838

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495290.005	0.751
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495260.005	0.845
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495260.005	0.803
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495260.005	0.812
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495260.005	0.833
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495230.005	0.842
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495230.005	0.832
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302360.002	1495230.005	0.798
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302390.002	1495230.005	0.842
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306740.002	1495230.005	0.262
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495200.005	0.838
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302330.002	1495200.005	0.825
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306530.002	1495200.005	0.659
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495200.005	0.562
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495170.005	0.842
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495170.005	0.623
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495170.005	0.619
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306620.002	1495170.005	0.613
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302270.002	1495140.005	0.832
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302300.002	1495140.005	0.838
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495140.005	0.692
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495140.005	0.653
10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	243	2000	NC	1302270.002	1495110.005	0.838
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495110.005	0.690
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495110.005	0.595
22400	Hexastylis naniflora	242	Dwarf-flowered Heartleaf	2005-05	2005-05	2005-05	Current	D	2-High	243	2000	NC	1302210.002	1495080.005	0.830
22400	Hexastylis naniflora	242	Dwarf-flowered Heartleaf	2005-05	2005-05	2005-05	Current	D	2-High	243	2000	NC	1302240.002	1495080.005	0.832
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495080.005	0.693
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495080.005	0.582
22400	Hexastylis naniflora	242	Dwarf-flowered Heartleaf	2005-05	2005-05	2005-05	Current	D	2-High	243	2000	NC	1302240.002	1495050.005	0.810
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495050.005	0.653
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495050.005	0.560
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306560.002	1495020.005	0.653
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1495020.005	0.653
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306620.002	1495020.005	0.585
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306590.002	1494990.005	0.651
24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	271	99	NC	1306620.002	1494990.005	0.591
24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	243	2000	NC	1304100.002	1494960.005	0.832
24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	243	2000	NC	1304130.002	1494960.005	0.835
24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	243	2000	NC	1304100.002	1494930.005	0.307
24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	243	2000	NC	1304130.002	1494930.005	0.311
24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	243	2000	NC	1304160.002	1494930.005	0.313
24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	243	2000	NC	1304190.002	1494930.005	0.843
24776	Hexastylis naniflora	269	Dwarf-flowered Heartleaf	2007	2007	2006	Current	B	2-High	243	2000	NC	1303740.002	1494660.005	0.701
24776	Hexastylis naniflora	269	Dwarf-flowered Heartleaf	2007	2007	2006	Current	B	2-High	243	2000	NC	1303710.002	1494630.005	0.662
24776	Hexastylis naniflora	269	Dwarf-flowered Heartleaf	2007	2007	2006	Current	B	2-High	243	2000	NC	1303680.002	1494600.005	0.704
36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	309	99	NC	1288410.002	1494180.005	0.021
36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	309	99	NC	1288440.002	1494180.005	0.028
36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	309	99	NC	1288410.002	1494150.005	0.028
36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	309	99	NC	1288440.002	1494150.005	0.027
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335810.002	1494150.005	0.713

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335780.002	1494120.005	0.750
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335810.002	1494120.005	0.608
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335840.002	1494120.005	0.608
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335780.002	1494090.005	0.752
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335810.002	1494090.005	0.752
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335840.002	1494090.005	0.617
29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	293	99	NC	1335810.002	1494060.005	0.138
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305420.002	1487760.005	0.677
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305450.002	1487760.005	0.610
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305360.002	1487730.005	0.587
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305390.002	1487730.005	0.568
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305420.002	1487730.005	0.599
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305450.002	1487730.005	0.599
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305300.002	1487700.005	0.680
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305330.002	1487700.005	0.784
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305360.002	1487700.005	0.747
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305390.002	1487700.005	0.673
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305420.002	1487700.005	0.491
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305450.002	1487700.005	0.491
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305210.002	1487670.005	0.783
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305240.002	1487670.005	0.676
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305270.002	1487670.005	0.676
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305300.002	1487670.005	0.745
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305330.002	1487670.005	0.781
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305360.002	1487670.005	0.690
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305390.002	1487670.005	0.461
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305420.002	1487670.005	0.486
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305150.002	1487640.005	0.740
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305180.002	1487640.005	0.742
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305210.002	1487640.005	0.686
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305240.002	1487640.005	0.775
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305270.002	1487640.005	0.688
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305300.002	1487640.005	0.753
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305330.002	1487640.005	0.743
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305360.002	1487640.005	0.742
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305060.002	1487610.005	0.772
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305090.002	1487610.005	0.772
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305120.002	1487610.005	0.678
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305150.002	1487610.005	0.467
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305030.002	1487580.005	0.680
109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	98	500	NC	1305090.002	1487580.005	0.777
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305480.002	1487340.005	0.579
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305510.002	1487340.005	0.585
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305540.002	1487340.005	0.587
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305570.002	1487340.005	0.589
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305600.002	1487340.005	0.593
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305630.002	1487340.005	0.559
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305660.002	1487340.005	0.595
13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	98	500	NC	1305690.002	1487340.005	0.601
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304670.002	1487280.005	0.175
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487280.005	0.159

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7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304730.002	1487280.005	0.400
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304640.002	1487250.005	0.181
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304670.002	1487250.005	0.181
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487250.005	0.399
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304730.002	1487250.005	0.402
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304760.002	1487250.005	0.399
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304610.002	1487220.005	0.359
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304640.002	1487220.005	0.082
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304670.002	1487220.005	0.180
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487220.005	0.156
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304730.002	1487220.005	0.397
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304760.002	1487220.005	0.366
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304790.002	1487220.005	0.315
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304610.002	1487190.005	0.358
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304640.002	1487190.005	0.358
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304670.002	1487190.005	0.179
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487190.005	0.207
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304730.002	1487190.005	0.390
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304760.002	1487190.005	0.444
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304790.002	1487190.005	0.444
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304610.002	1487160.005	0.171
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304640.002	1487160.005	0.356
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304670.002	1487160.005	0.368
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487160.005	0.205
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304730.002	1487160.005	0.493
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304760.002	1487160.005	0.427
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304790.002	1487160.005	0.172
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304640.002	1487130.005	0.353
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304670.002	1487130.005	0.356
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487130.005	0.409
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304730.002	1487130.005	0.204
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304760.002	1487130.005	0.172
7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	98	500	NC	1304700.002	1487100.005	0.176
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303500.002	1485810.005	0.262
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485810.005	0.263
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485810.005	0.174
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303470.002	1485780.005	0.591
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303500.002	1485780.005	0.504
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485780.005	0.262
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485780.005	0.502
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303590.002	1485780.005	0.506
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303440.002	1485750.005	0.651
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303470.002	1485750.005	0.653
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303500.002	1485750.005	0.653
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485750.005	0.507
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485750.005	0.507
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303590.002	1485750.005	0.653
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303620.002	1485750.005	0.653
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303440.002	1485720.005	0.722
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303470.002	1485720.005	0.719
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303500.002	1485720.005	0.510

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485720.005	0.508
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485720.005	0.716
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303590.002	1485720.005	0.752
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303620.002	1485720.005	0.474
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303470.002	1485690.005	0.714
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303500.002	1485690.005	0.501
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485690.005	0.635
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485690.005	0.424
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303590.002	1485690.005	0.657
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303620.002	1485690.005	0.667
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303470.002	1485660.005	0.654
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303500.002	1485660.005	0.495
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485660.005	0.420
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485660.005	0.418
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303590.002	1485660.005	0.421
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303530.002	1485630.005	0.414
4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	98	500	NC	1303560.002	1485630.005	0.413
28199	Hexastylis naniflora	279	Dwarf-flowered Heartleaf	2009-04-20	2009-04-20	2009-04-20	Current	D?	2-High	279	99	NC	1322430.002	1483680.005	0.908
28199	Hexastylis naniflora	279	Dwarf-flowered Heartleaf	2009-04-20	2009-04-20	2009-04-20	Current	D?	2-High	279	99	NC	1322430.002	1483650.005	0.895
28199	Hexastylis naniflora	279	Dwarf-flowered Heartleaf	2009-04-20	2009-04-20	2009-04-20	Current	D?	2-High	279	99	NC	1322460.002	1483650.005	0.908
19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	302	2000	NC	1322310.002	1480080.005	0.711
19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	302	2000	NC	1322340.002	1480080.005	0.715
19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	302	2000	NC	1322370.002	1480080.005	0.723
19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	302	2000	NC	1322340.002	1480050.005	0.595
19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	302	2000	NC	1322370.002	1480050.005	0.620
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283580.002	1479900.005	0.646
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283550.002	1479870.005	0.652
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283580.002	1479870.005	0.646
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283580.002	1479840.005	0.650
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283820.002	1479750.005	0.646
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283790.002	1479720.005	0.654
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283820.002	1479720.005	0.646
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283850.002	1479720.005	0.608
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283760.002	1479690.005	0.660
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283790.002	1479690.005	0.620
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283820.002	1479690.005	0.449
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283850.002	1479690.005	0.432
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283880.002	1479690.005	0.426
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283790.002	1479660.005	0.544
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283820.002	1479660.005	0.431
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283850.002	1479660.005	0.427
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322460.002	1479270.005	0.785
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322490.002	1479270.005	0.769
21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	157	500	NC	1288410.002	1479240.005	0.532
21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	157	500	NC	1288440.002	1479240.005	0.530
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1479240.005	0.792
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322460.002	1479240.005	0.748
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322490.002	1479240.005	0.578
21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	157	500	NC	1288320.002	1479210.005	0.212
21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	157	500	NC	1288350.002	1479210.005	0.561
21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	157	500	NC	1288380.002	1479210.005	0.457

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322400.002	1479210.005	0.798
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1479210.005	0.750
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322370.002	1479180.005	0.798
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322400.002	1479180.005	0.754
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322340.002	1479150.005	0.806
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322370.002	1479150.005	0.791
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322310.002	1479120.005	0.826
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322340.002	1479120.005	0.825
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322550.002	1479120.005	0.782
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322280.002	1479090.005	0.836
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322310.002	1479090.005	0.787
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322340.002	1479090.005	0.735
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322370.002	1479090.005	0.718
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322400.002	1479090.005	0.720
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1479090.005	0.767
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322460.002	1479090.005	0.794
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322490.002	1479090.005	0.750
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322520.002	1479090.005	0.693
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322250.002	1479060.005	0.838
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322280.002	1479060.005	0.725
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322310.002	1479060.005	0.698
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322340.002	1479060.005	0.690
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322400.002	1479060.005	0.682
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1479060.005	0.679
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322460.002	1479060.005	0.679
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322250.002	1479030.005	0.831
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322280.002	1479030.005	0.711
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322250.002	1479000.005	0.802
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478850.005	0.789
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322730.002	1478850.005	0.454
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322760.002	1478850.005	0.449
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322790.002	1478850.005	0.248
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478820.005	0.801
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478820.005	0.796
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478820.005	0.541
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322730.002	1478820.005	0.530
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478790.005	0.803
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478790.005	0.547
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322010.002	1478760.005	0.624
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322040.002	1478760.005	0.628
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322070.002	1478760.005	0.745
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322100.002	1478760.005	0.745
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322130.002	1478760.005	0.744
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322160.002	1478760.005	0.628
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322220.002	1478760.005	0.611
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322250.002	1478760.005	0.615
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478760.005	0.796
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322100.002	1478730.005	0.735
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322130.002	1478730.005	0.733
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322220.002	1478730.005	0.742
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322250.002	1478730.005	0.746

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1478700.005	0.680
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478700.005	0.682
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478700.005	0.801
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322760.002	1478700.005	0.546
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322790.002	1478700.005	0.540
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478670.005	0.817
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478670.005	0.808
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478670.005	0.769
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478670.005	0.754
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478640.005	0.684
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478640.005	0.801
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322280.002	1478400.005	0.766
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322310.002	1478400.005	0.745
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322340.002	1478400.005	0.738
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322370.002	1478400.005	0.736
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322400.002	1478400.005	0.745
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1478400.005	0.817
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478400.005	0.836
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478400.005	0.836
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478400.005	0.834
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322280.002	1478370.005	0.717
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322310.002	1478370.005	0.703
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322340.002	1478370.005	0.730
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322370.002	1478370.005	0.513
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322400.002	1478370.005	0.722
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1478370.005	0.797
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322460.002	1478370.005	0.827
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322490.002	1478370.005	0.848
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322520.002	1478370.005	0.846
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322550.002	1478370.005	0.844
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322580.002	1478370.005	0.832
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478370.005	0.828
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478370.005	0.832
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478370.005	0.831
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478370.005	0.834
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322730.002	1478370.005	0.842
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322760.002	1478370.005	0.831
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322790.002	1478370.005	0.829
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322820.002	1478370.005	0.754
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322850.002	1478370.005	0.747
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322430.002	1478340.005	0.713
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322460.002	1478340.005	0.715
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322490.002	1478340.005	0.737
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322520.002	1478340.005	0.788
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322550.002	1478340.005	0.792
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322580.002	1478340.005	0.836
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478340.005	0.833
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478340.005	0.733
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478340.005	0.733
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478340.005	0.779
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322730.002	1478340.005	0.816

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322760.002	1478340.005	0.815
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322790.002	1478340.005	0.819
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322820.002	1478340.005	0.738
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322850.002	1478340.005	0.737
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322880.002	1478340.005	0.653
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322520.002	1478310.005	0.724
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322580.002	1478310.005	0.746
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478310.005	0.804
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478310.005	0.692
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322850.002	1478310.005	0.695
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322880.002	1478310.005	0.647
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478280.005	0.790
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478280.005	0.783
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322610.002	1478250.005	0.774
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478250.005	0.808
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478250.005	0.722
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322640.002	1478220.005	0.792
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322670.002	1478220.005	0.799
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478220.005	0.714
24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	302	2000	NC	1322700.002	1478190.005	0.789
24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	272	500	NC	1283800.859	1479875.481	0.632
33240	Hexastylis naniflora	299	Dwarf-flowered Heartleaf	2014-04-01	2014-04-01	2010-04-13	Current	D	2-High	299	99	NC	1329040.518	1479040.687	0.177
33240	Hexastylis naniflora	299	Dwarf-flowered Heartleaf	2014-04-01	2014-04-01	2010-04-13	Current	D	2-High	299	99	NC	1329061.952	1479050.257	0.392
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466220.005	0.718
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466220.005	0.792
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303140.002	1466220.005	0.787
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303170.002	1466220.005	0.788
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303200.002	1466220.005	0.679
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303230.002	1466220.005	0.760
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466190.005	0.827
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466190.005	0.787
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466190.005	0.842
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303140.002	1466190.005	0.842
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303170.002	1466190.005	0.842
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303200.002	1466190.005	0.859
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303230.002	1466190.005	0.858
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466160.005	0.798
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466160.005	0.789
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466160.005	0.848
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303140.002	1466160.005	0.845
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303170.002	1466160.005	0.837
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303200.002	1466160.005	0.831
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466130.005	0.800
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466130.005	0.793
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466130.005	0.843
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466100.005	0.749
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466100.005	0.848
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466100.005	0.843
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303140.002	1466100.005	0.832
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466070.005	0.660
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466070.005	0.711

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466070.005	0.794
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303140.002	1466070.005	0.785
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303020.002	1466040.005	0.713
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466040.005	0.718
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466040.005	0.697
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466040.005	0.688
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303020.002	1466010.005	0.668
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1466010.005	0.731
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1466010.005	0.705
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1466010.005	0.690
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303020.002	1465980.005	0.668
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1465980.005	0.648
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1465980.005	0.709
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1465980.005	0.699
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303050.002	1465950.005	0.260
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303080.002	1465950.005	0.781
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303110.002	1465950.005	0.723
16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	232	1000	NC	1303140.002	1465950.005	0.714
33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	298	500	NC	1292760.002	1465800.005	0.231
33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	298	500	NC	1292790.002	1465800.005	0.241
33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	298	500	NC	1292820.002	1465800.005	0.295
33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	298	500	NC	1292790.002	1465770.005	0.212
33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	298	500	NC	1292850.002	1465770.005	0.297
33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	298	500	NC	1292880.002	1465770.005	0.303
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303260.002	1465590.005	0.316
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303290.002	1465590.005	0.743
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303260.002	1465560.005	0.410
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303290.002	1465560.005	0.687
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303290.002	1465380.005	0.734
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303320.002	1465380.005	0.735
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303350.002	1465380.005	0.744
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303380.002	1465380.005	0.751
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303410.002	1465380.005	0.803
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303440.002	1465380.005	0.677
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303380.002	1465350.005	0.793
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303410.002	1465350.005	0.749
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303440.002	1465350.005	0.741
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303380.002	1465320.005	0.793
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303410.002	1465320.005	0.814
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303440.002	1465320.005	0.741
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303380.002	1465290.005	0.786
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303410.002	1465290.005	0.814
22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	232	1000	NC	1303440.002	1465290.005	0.814
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303620.002	1463640.005	0.814
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303650.002	1463640.005	0.777
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303590.002	1463610.005	0.817
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303620.002	1463610.005	0.812
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303650.002	1463610.005	0.709
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303530.002	1463580.005	0.757
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303560.002	1463580.005	0.818
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303590.002	1463580.005	0.816

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303620.002	1463580.005	0.707
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303650.002	1463580.005	0.435
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303500.002	1463550.005	0.736
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303530.002	1463550.005	0.749
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303560.002	1463550.005	0.729
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303590.002	1463550.005	0.712
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303620.002	1463550.005	0.560
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303500.002	1463520.005	0.757
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303530.002	1463520.005	0.713
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303560.002	1463520.005	0.774
643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	216	2000	NC	1303500.002	1463490.005	0.770
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302750.002	1462410.005	0.344
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302780.002	1462410.005	0.346
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302720.002	1462380.005	0.767
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302750.002	1462380.005	0.778
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302780.002	1462380.005	0.780
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302810.002	1462380.005	0.781
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302840.002	1462380.005	0.772
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302720.002	1462350.005	0.667
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302750.002	1462350.005	0.771
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302780.002	1462350.005	0.654
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302810.002	1462350.005	0.656
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302840.002	1462350.005	0.675
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302870.002	1462350.005	0.729
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302900.002	1462350.005	0.673
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302780.002	1462320.005	0.483
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302810.002	1462320.005	0.661
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302840.002	1462320.005	0.667
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302870.002	1462320.005	0.669
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302900.002	1462320.005	0.469
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302840.002	1462290.005	0.667
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302870.002	1462290.005	0.466
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302900.002	1462290.005	0.466
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302930.002	1462290.005	0.169
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302870.002	1462260.005	0.460
22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	216	2000	NC	1302900.002	1462260.005	0.461
22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	216	2000	NC	1303590.002	1461840.005	0.600
22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	216	2000	NC	1303620.002	1461840.005	0.592
22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	216	2000	NC	1303650.002	1461840.005	0.590
22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	216	2000	NC	1303680.002	1461840.005	0.590
22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	216	2000	NC	1303710.002	1461840.005	0.594
22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	216	2000	NC	1303740.002	1461810.005	0.622
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303890.002	1461210.005	0.514
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303920.002	1461210.005	0.857
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303890.002	1461180.005	0.860
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303920.002	1461180.005	0.852
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303950.002	1461180.005	0.866
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303890.002	1461150.005	0.579
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303920.002	1461150.005	0.775
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303950.002	1461150.005	0.866
22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	216	2000	NC	1303920.002	1461120.005	0.563

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292550.002	1461000.005	0.590
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292550.002	1460970.005	0.742
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292580.002	1460970.005	0.697
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292550.002	1460940.005	0.744
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292580.002	1460940.005	0.703
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292610.002	1460940.005	0.693
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293360.002	1460850.005	0.295
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293390.002	1460850.005	0.682
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293360.002	1460820.005	0.300
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292670.002	1460670.005	0.384
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1292700.002	1460670.005	0.382
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295580.002	1460640.005	0.781
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295610.002	1460640.005	0.637
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295550.002	1460610.005	0.775
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295580.002	1460610.005	0.773
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295610.002	1460610.005	0.631
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295640.002	1460610.005	0.619
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303770.002	1460610.005	0.569
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303800.002	1460610.005	0.633
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460610.005	0.637
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295520.002	1460580.005	0.776
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295550.002	1460580.005	0.773
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295580.002	1460580.005	0.733
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295610.002	1460580.005	0.625
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303740.002	1460580.005	0.486
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303770.002	1460580.005	0.557
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303800.002	1460580.005	0.570
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460580.005	0.629
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295520.002	1460550.005	0.771
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295550.002	1460550.005	0.732
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295580.002	1460550.005	0.633
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303740.002	1460550.005	0.400
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303770.002	1460550.005	0.568
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303800.002	1460550.005	0.494
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460550.005	0.677
22199	Hexastylis naniflora	192	Dwarf-flowered Heartleaf	2000-10-27	2000-10-27	1998-2000	Current	C	2-High	217	2000	NC	1294350.002	1460520.005	0.760
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295520.002	1460520.005	0.769
22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	217	2000	NC	1295550.002	1460520.005	0.698
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303740.002	1460520.005	0.399
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303770.002	1460520.005	0.488
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303800.002	1460520.005	0.559
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460520.005	0.562
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460490.005	0.642
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460490.005	0.506
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303800.002	1460490.005	0.589
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460490.005	0.659
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303860.002	1460490.005	0.550
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293960.002	1460460.005	0.722
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1293990.002	1460460.005	0.797
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460460.005	0.400
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460460.005	0.535

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303800.002	1460460.005	0.657
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460460.005	0.657
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303860.002	1460460.005	0.474
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293930.002	1460430.005	0.663
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293960.002	1460430.005	0.719
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1293990.002	1460430.005	0.784
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460430.005	0.730
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460430.005	0.535
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460430.005	0.497
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303830.002	1460430.005	0.550
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1293990.002	1460400.005	0.714
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460400.005	0.724
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460400.005	0.727
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460400.005	0.721
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1293990.002	1460370.005	0.709
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460370.005	0.383
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460370.005	0.640
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460370.005	0.719
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460340.005	0.603
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460340.005	0.646
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460340.005	0.717
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460310.005	0.669
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460310.005	0.703
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460310.005	0.704
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460280.005	0.663
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460280.005	0.683
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460280.005	0.692
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460250.005	0.659
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460250.005	0.677
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460250.005	0.608
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460220.005	0.663
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460220.005	0.677
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460220.005	0.667
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1293990.002	1460190.005	0.568
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460190.005	0.342
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460190.005	0.673
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460190.005	0.278
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1293990.002	1460160.005	0.277
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460160.005	0.465
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460160.005	0.671
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294080.002	1460160.005	0.566
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294020.002	1460130.005	0.668
22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	217	2000	NC	1294050.002	1460130.005	0.665
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293660.002	1460040.005	0.712
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293690.002	1460040.005	0.702
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293660.002	1460010.005	0.703
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293690.002	1460010.005	0.704
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293720.002	1460010.005	0.579
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293660.002	1459980.005	0.583
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293690.002	1459980.005	0.706
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293720.002	1459980.005	0.581

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293750.002	1459980.005	0.646
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293660.002	1459950.005	0.581
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293690.002	1459950.005	0.585
22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	217	2000	NC	1293720.002	1459950.005	0.260
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304010.002	1459680.005	0.680
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304040.002	1459680.005	0.786
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303980.002	1459650.005	0.686
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304010.002	1459650.005	0.690
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304040.002	1459650.005	0.599
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304070.002	1459650.005	0.317
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303950.002	1459620.005	0.544
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303980.002	1459620.005	0.534
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304010.002	1459620.005	0.636
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304040.002	1459620.005	0.355
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304070.002	1459620.005	0.581
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303920.002	1459590.005	0.300
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303950.002	1459590.005	0.529
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303980.002	1459590.005	0.530
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304010.002	1459590.005	0.632
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304040.002	1459590.005	0.312
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303920.002	1459560.005	0.237
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303950.002	1459560.005	0.299
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303980.002	1459560.005	0.113
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1304010.002	1459560.005	0.161
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303950.002	1459530.005	0.111
22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	216	2000	NC	1303980.002	1459530.005	0.112
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265370.002	1458600.005	0.307
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265400.002	1458600.005	0.446
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265430.002	1458600.005	0.415
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265370.002	1458570.005	0.457
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265400.002	1458570.005	0.458
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265430.002	1458570.005	0.458
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265370.002	1458540.005	0.453
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265400.002	1458540.005	0.453
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265370.002	1458510.005	0.450
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265400.002	1458510.005	0.451
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265340.002	1458480.005	0.372
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265370.002	1458480.005	0.418
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265400.002	1458480.005	0.406
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265430.002	1458480.005	0.385
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265370.002	1458450.005	0.411
29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	292	500	NC	1265400.002	1458450.005	0.387
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304580.002	1458390.005	0.480
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304550.002	1458360.005	0.675
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304580.002	1458360.005	0.482
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304490.002	1458330.005	0.603
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304520.002	1458330.005	0.725
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304550.002	1458330.005	0.717
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304580.002	1458330.005	0.675
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304490.002	1458300.005	0.597
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304520.002	1458300.005	0.679

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304550.002	1458300.005	0.717
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304580.002	1458300.005	0.719
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304520.002	1458270.005	0.614
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304550.002	1458270.005	0.715
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304580.002	1458270.005	0.734
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304550.002	1458240.005	0.620
22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	214	2000	NC	1304580.002	1458240.005	0.722
22235	Hexastylis naniflora	212	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	1998-2000	Current	D	2-High	214	2000	NC	1304910.002	1458180.005	0.226
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262910.002	1458060.005	0.484
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262940.002	1458060.005	0.485
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262970.002	1458060.005	0.485
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1263090.002	1458060.005	0.375
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262820.002	1458030.005	0.485
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262760.002	1458000.005	0.488
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261230.002	1457970.005	0.663
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262520.002	1457970.005	0.498
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262550.002	1457970.005	0.500
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262580.002	1457970.005	0.496
21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	176	2000	NC	1262670.002	1457970.005	0.492
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457970.005	0.792
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457970.005	0.647
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261260.002	1457940.005	0.661
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261740.002	1457940.005	0.515
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457940.005	0.647
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457940.005	0.642
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261170.002	1457910.005	0.668
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261230.002	1457910.005	0.660
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261290.002	1457910.005	0.656
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261740.002	1457910.005	0.488
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261770.002	1457910.005	0.536
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304700.002	1457910.005	0.792
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457910.005	0.644
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457910.005	0.636
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261170.002	1457880.005	0.670
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261200.002	1457880.005	0.680
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261320.002	1457880.005	0.654
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261440.002	1457880.005	0.520
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261470.002	1457880.005	0.519
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261500.002	1457880.005	0.552
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261530.002	1457880.005	0.553
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261560.002	1457880.005	0.507
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261740.002	1457880.005	0.206
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261770.002	1457880.005	0.525
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457880.005	0.644
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457880.005	0.623
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261200.002	1457850.005	0.662
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261440.002	1457850.005	0.524
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261740.002	1457850.005	0.542
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261770.002	1457850.005	0.534
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457850.005	0.649
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457850.005	0.691

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261380.002	1457820.005	0.648
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261440.002	1457820.005	0.558
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261740.002	1457820.005	0.548
21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	176	2000	NC	1261770.002	1457820.005	0.538
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457820.005	0.734
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457820.005	0.691
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304730.002	1457790.005	0.421
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457790.005	0.417
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304790.002	1457790.005	0.134
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261380.002	1457760.005	0.661
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261410.002	1457760.005	0.651
21401	Hexastylis naniflora	170	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	C	2-High	176	2000	NC	1262730.002	1457760.005	0.488
21401	Hexastylis naniflora	170	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	C	2-High	176	2000	NC	1262760.002	1457760.005	0.487
21401	Hexastylis naniflora	170	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	C	2-High	176	2000	NC	1262790.002	1457760.005	0.485
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304760.002	1457760.005	0.116
22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	214	2000	NC	1304790.002	1457760.005	0.112
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261410.002	1457730.005	0.661
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261440.002	1457730.005	0.564
21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	176	2000	NC	1261500.002	1457700.005	0.517
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305150.002	1457700.005	0.811
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305060.002	1457670.005	0.667
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305090.002	1457670.005	0.809
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305120.002	1457670.005	0.817
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1304970.002	1457640.005	0.616
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305000.002	1457640.005	0.794
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305030.002	1457640.005	0.795
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305060.002	1457640.005	0.801
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305090.002	1457640.005	0.821
22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	214	2000	NC	1305120.002	1457640.005	0.814
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305210.002	1457520.005	0.761
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305240.002	1457520.005	0.273
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305270.002	1457520.005	0.366
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305300.002	1457520.005	0.766
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273830.002	1457490.005	0.714
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305150.002	1457490.005	0.337
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305180.002	1457490.005	0.657
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305210.002	1457490.005	0.799
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305240.002	1457490.005	0.802
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305270.002	1457490.005	0.879
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305300.002	1457490.005	0.862
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305420.002	1457490.005	0.455
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305450.002	1457490.005	0.698
22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	216	2000	NC	1303856.114	1460748.968	0.651
35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	217	2000	NC	1293577.694	1460949.527	0.750
22199	Hexastylis naniflora	192	Dwarf-flowered Heartleaf	2000-10-27	2000-10-27	1998-2000	Current	C	2-High	217	2000	NC	1294272.001	1460526.397	0.743
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273770.002	1457460.005	0.737
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273800.002	1457460.005	0.635
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305150.002	1457460.005	0.523
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305180.002	1457460.005	0.713
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305210.002	1457460.005	0.802
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305240.002	1457460.005	0.816

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305270.002	1457460.005	0.819
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305300.002	1457460.005	0.821
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305330.002	1457460.005	0.826
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305420.002	1457460.005	0.610
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305450.002	1457460.005	0.615
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305480.002	1457460.005	0.705
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273470.002	1457430.005	0.814
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273500.002	1457430.005	0.868
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273650.002	1457430.005	0.686
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273680.002	1457430.005	0.738
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305180.002	1457430.005	0.529
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305210.002	1457430.005	0.715
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305270.002	1457430.005	0.790
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305300.002	1457430.005	0.783
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305420.002	1457430.005	0.700
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305450.002	1457430.005	0.706
22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	214	2000	NC	1305480.002	1457430.005	0.712
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273470.002	1457400.005	0.779
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273500.002	1457400.005	0.768
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273530.002	1457400.005	0.728
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273560.002	1457400.005	0.770
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273590.002	1457400.005	0.745
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273620.002	1457400.005	0.731
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273650.002	1457400.005	0.716
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273470.002	1457370.005	0.829
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273500.002	1457370.005	0.709
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273530.002	1457370.005	0.710
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273560.002	1457370.005	0.701
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273590.002	1457370.005	0.711
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273680.002	1457340.005	0.720
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273710.002	1457340.005	0.747
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273740.002	1457340.005	0.739
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273680.002	1457310.005	0.752
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273650.002	1457280.005	0.742
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273680.002	1457280.005	0.748
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273620.002	1457250.005	0.861
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273650.002	1457250.005	0.747
13728	Hexastylis naniflora	34	Dwarf-flowered Heartleaf	2005-05-19	2005-05-19	1997-06-04	Current	D	2-High	93	500	NC	1296300.002	1457250.005	0.904
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273590.002	1457220.005	0.858
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273620.002	1457220.005	0.861
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273650.002	1457220.005	0.393
13728	Hexastylis naniflora	34	Dwarf-flowered Heartleaf	2005-05-19	2005-05-19	1997-06-04	Current	D	2-High	93	500	NC	1296270.002	1457220.005	0.896
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273140.002	1457190.005	0.845
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273200.002	1457190.005	0.836
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273560.002	1457190.005	0.853
13728	Hexastylis naniflora	34	Dwarf-flowered Heartleaf	2005-05-19	2005-05-19	1997-06-04	Current	D	2-High	93	500	NC	1296240.002	1457190.005	0.895
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273110.002	1457160.005	0.849
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273140.002	1457160.005	0.843
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305870.002	1457070.005	0.614
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305900.002	1457070.005	0.609
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305840.002	1457040.005	0.608

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305870.002	1457040.005	0.631
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305780.002	1457010.005	0.694
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305810.002	1457010.005	0.582
22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	214	2000	NC	1305810.002	1456980.005	0.582
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273200.002	1456950.005	0.820
21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	154	2000	NC	1273170.002	1456860.005	0.820
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295040.002	1456860.005	0.800
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295070.002	1456860.005	0.744
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295100.002	1456860.005	0.733
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295040.002	1456830.005	0.370
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295070.002	1456830.005	0.325
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295100.002	1456830.005	0.225
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295070.002	1456800.005	0.220
3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	93	500	NC	1295100.002	1456800.005	0.219
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306260.002	1456590.005	0.370
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306230.002	1456560.005	0.476
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306260.002	1456560.005	0.495
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306290.002	1456560.005	0.414
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306200.002	1456530.005	0.576
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306230.002	1456530.005	0.527
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306260.002	1456530.005	0.576
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306290.002	1456530.005	0.447
22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	214	2000	NC	1306200.002	1456500.005	0.446
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306530.002	1456410.005	0.596
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306560.002	1456410.005	0.497
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306440.002	1456380.005	0.299
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306470.002	1456380.005	0.622
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306500.002	1456380.005	0.625
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306530.002	1456380.005	0.608
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306560.002	1456380.005	0.587
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306470.002	1456350.005	0.617
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306500.002	1456350.005	0.619
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306530.002	1456350.005	0.626
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306560.002	1456350.005	0.532
21053	Hexastylis naniflora	122	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B?	2-High	177	2000	NC	1263630.002	1456290.005	0.179
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306380.002	1456290.005	0.709
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306410.002	1456290.005	0.798
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306440.002	1456290.005	0.784
21053	Hexastylis naniflora	122	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B?	2-High	177	2000	NC	1263570.002	1456260.005	0.124
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306350.002	1456260.005	0.710
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306380.002	1456260.005	0.801
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306410.002	1456260.005	0.784
22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	214	2000	NC	1306380.002	1456230.005	0.434
20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	177	2000	NC	1263510.002	1456170.005	0.180
20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	177	2000	NC	1263510.002	1456140.005	0.174
20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	177	2000	NC	1263510.002	1456110.005	0.173
20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	177	2000	NC	1263510.002	1456080.005	0.172
21397	Hexastylis naniflora	166	Dwarf-flowered Heartleaf	2005-03-31	2005-03-31	2005-03-31	Current	CD	2-High	177	2000	NC	1264530.002	1455900.005	0.488
21397	Hexastylis naniflora	166	Dwarf-flowered Heartleaf	2005-03-31	2005-03-31	2005-03-31	Current	CD	2-High	177	2000	NC	1264560.002	1455900.005	0.401
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306020.002	1455690.005	0.796
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306050.002	1455690.005	0.438

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1305990.002	1455660.005	0.432
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306020.002	1455660.005	0.794
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306050.002	1455660.005	0.794
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306080.002	1455660.005	0.437
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1305990.002	1455630.005	0.385
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306020.002	1455630.005	0.789
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306050.002	1455630.005	0.801
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306080.002	1455630.005	0.471
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306020.002	1455600.005	0.702
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306050.002	1455600.005	0.793
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306080.002	1455600.005	0.807
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306110.002	1455600.005	0.798
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306050.002	1455570.005	0.711
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306080.002	1455570.005	0.801
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306110.002	1455570.005	0.807
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306080.002	1455540.005	0.793
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306140.002	1455450.005	0.632
21396	Hexastylis naniflora	165	Dwarf-flowered Heartleaf	2005-04-05	2005-04-05	2005-04-05	Current	C	2-High	177	2000	NC	1263900.002	1455420.005	0.537
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306140.002	1455420.005	0.640
22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	206	99	NC	1306170.002	1455420.005	0.703
21396	Hexastylis naniflora	165	Dwarf-flowered Heartleaf	2005-04-05	2005-04-05	2005-04-05	Current	C	2-High	177	2000	NC	1263900.002	1455390.005	0.613
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308180.002	1455270.005	0.743
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308210.002	1455270.005	0.769
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308240.002	1455270.005	0.628
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308270.002	1455270.005	0.733
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308240.002	1455240.005	0.328
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308270.002	1455240.005	0.330
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308300.002	1455240.005	0.816
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308330.002	1455240.005	0.724
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308360.002	1455240.005	0.724
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308330.002	1455210.005	0.818
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308360.002	1455210.005	0.849
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308390.002	1455210.005	0.836
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308420.002	1455210.005	0.808
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308450.002	1455210.005	0.807
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308480.002	1455210.005	0.816
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1455210.005	0.851
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1455210.005	0.725
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1455210.005	0.721
5682	Hexastylis naniflora	16	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1977	Current	E	2-High	177	2000	NC	1264680.002	1455180.005	0.368
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308240.002	1455180.005	0.318
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308270.002	1455180.005	0.323
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308300.002	1455180.005	0.325
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308390.002	1455180.005	0.756
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308420.002	1455180.005	0.766
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308450.002	1455180.005	0.802
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308480.002	1455180.005	0.814
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1455180.005	0.842
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1455180.005	0.721
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1455180.005	0.713
5682	Hexastylis naniflora	16	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1977	Current	E	2-High	177	2000	NC	1264710.002	1455150.005	0.370

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308210.002	1455150.005	0.316
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308240.002	1455150.005	0.318
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308270.002	1455150.005	0.320
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308300.002	1455150.005	0.325
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308330.002	1455150.005	0.725
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308420.002	1455150.005	0.326
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308450.002	1455150.005	0.737
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308240.002	1455120.005	0.318
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308270.002	1455120.005	0.729
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308300.002	1455120.005	0.376
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308420.002	1455120.005	0.335
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1455060.005	0.722
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1455060.005	0.705
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1455060.005	0.630
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308600.002	1455060.005	0.724
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308630.002	1455060.005	0.709
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308450.002	1455030.005	0.326
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308480.002	1455030.005	0.724
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1455030.005	0.718
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1455030.005	0.720
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1455030.005	0.726
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1455000.005	0.710
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1454970.005	0.703
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1454970.005	0.699
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1454970.005	0.707
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1454940.005	0.697
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1454940.005	0.225
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1454940.005	0.229
21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	177	2000	NC	1264530.002	1454910.005	0.267
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308510.002	1454910.005	0.558
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1454910.005	0.205
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308570.002	1454910.005	0.205
21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	177	2000	NC	1264500.002	1454880.005	0.585
21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	177	2000	NC	1264530.002	1454880.005	0.573
22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	208	99	NC	1308540.002	1454880.005	0.564
21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	177	2000	NC	1264440.002	1454850.005	0.597
21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	177	2000	NC	1264470.002	1454850.005	0.583
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263510.002	1454460.005	0.461
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263510.002	1454430.005	0.466
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263540.002	1454430.005	0.466
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263480.002	1454400.005	0.473
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263510.002	1454400.005	0.464
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263540.002	1454400.005	0.479
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263540.002	1454370.005	0.385
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263570.002	1454370.005	0.331
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263630.002	1454370.005	0.217
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263660.002	1454340.005	0.219
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263720.002	1454310.005	0.260
21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	177	2000	NC	1263750.002	1454280.005	0.270
37916		320											1299526.67	1456756.853	0.917
36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	312	2000	NC	1266150.002	1452780.005	0.294

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	312	2000	NC	1266120.002	1452750.005	0.273
36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	312	2000	NC	1266150.002	1452750.005	0.231
36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	312	2000	NC	1266090.002	1452720.005	0.304
36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	312	2000	NC	1266120.002	1452720.005	0.213
36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	312	2000	NC	1266150.002	1452720.005	0.231
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271220.002	1451610.005	0.317
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269420.002	1451460.005	0.608
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269450.002	1451430.005	0.881
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269480.002	1451430.005	0.842
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269510.002	1451430.005	0.840
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269510.002	1451400.005	0.850
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269540.002	1451400.005	0.853
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269570.002	1451400.005	0.892
8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	247	2000	NC	1269600.002	1451400.005	0.819
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271400.002	1451370.005	0.388
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271310.002	1451340.005	0.373
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271340.002	1451340.005	0.402
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271370.002	1451340.005	0.399
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271250.002	1451310.005	0.384
6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	247	2000	NC	1271280.002	1451310.005	0.411
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286160.002	1450500.005	0.799
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286190.002	1450500.005	0.767
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286130.002	1450470.005	0.752
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286490.002	1450290.005	0.775
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286520.002	1450290.005	0.773
22394	Hexastylis naniflora	240	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001	Historical	F	2-High	100	2000	NC	1285920.002	1450260.005	0.846
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286490.002	1450260.005	0.774
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286520.002	1450260.005	0.771
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286550.002	1450260.005	0.770
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286580.002	1450260.005	0.772
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286520.002	1450230.005	0.674
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286610.002	1450230.005	0.781
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286640.002	1450230.005	0.859
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286850.002	1450170.005	0.748
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286880.002	1450170.005	0.741
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286880.002	1450140.005	0.626
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286910.002	1450140.005	0.651
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1450080.005	0.823
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1450080.005	0.809
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1450050.005	0.855
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1450050.005	0.769
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1450020.005	0.822
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1450020.005	0.775
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449990.005	0.856
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449990.005	0.789
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1449990.005	0.852
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286250.002	1449990.005	0.810
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449960.005	0.835
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449960.005	0.820
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1449960.005	0.801
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286250.002	1449960.005	0.788

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449930.005	0.828
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449930.005	0.814
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1449930.005	0.783
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286250.002	1449930.005	0.685
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286130.002	1449900.005	0.849
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449900.005	0.808
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449900.005	0.792
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1449900.005	0.691
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449870.005	0.840
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449870.005	0.791
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286130.002	1449870.005	0.808
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449870.005	0.794
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449870.005	0.779
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449840.005	0.847
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449840.005	0.853
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449840.005	0.787
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449840.005	0.769
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286280.002	1449840.005	0.864
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286310.002	1449840.005	0.863
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449810.005	0.864
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449810.005	0.834
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449810.005	0.788
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449810.005	0.768
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286250.002	1449810.005	0.879
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286280.002	1449810.005	0.876
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286310.002	1449810.005	0.871
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286340.002	1449810.005	0.861
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286415.371	1450350.021	0.779
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286385.19	1450405.727	0.865
22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	100	2000	NC	1286280.616	1450427.99	0.876
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285980.002	1449780.005	0.840
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449780.005	0.859
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449780.005	0.861
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449780.005	0.761
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449780.005	0.772
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286130.002	1449780.005	0.816
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449780.005	0.892
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449780.005	0.891
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1449780.005	0.881
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286250.002	1449780.005	0.879
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449750.005	0.860
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449750.005	0.807
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449750.005	0.767
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449750.005	0.772
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286130.002	1449750.005	0.862
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449750.005	0.885
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449750.005	0.891
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286220.002	1449750.005	0.837
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286250.002	1449750.005	0.788
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269570.002	1449720.005	0.702
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269600.002	1449720.005	0.838

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449720.005	0.842
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449720.005	0.752
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449720.005	0.729
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286130.002	1449720.005	0.773
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286160.002	1449720.005	0.792
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286190.002	1449720.005	0.785
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269600.002	1449690.005	0.702
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269630.002	1449690.005	0.795
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269660.002	1449690.005	0.798
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269690.002	1449690.005	0.838
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449690.005	0.739
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449690.005	0.785
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286100.002	1449690.005	0.773
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286640.002	1449690.005	0.699
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323900.002	1449690.005	0.006
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323930.002	1449690.005	0.081
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323960.002	1449690.005	0.082
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269690.002	1449660.005	0.756
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269720.002	1449660.005	0.839
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269750.002	1449660.005	0.845
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269780.002	1449660.005	0.842
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449660.005	0.722
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449660.005	0.798
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286610.002	1449660.005	0.701
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286640.002	1449660.005	0.759
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323900.002	1449660.005	0.019
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323930.002	1449660.005	0.075
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323960.002	1449660.005	0.098
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269780.002	1449630.005	0.841
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269810.002	1449630.005	0.848
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449630.005	0.785
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449630.005	0.803
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449630.005	0.770
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286550.002	1449630.005	0.766
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286580.002	1449630.005	0.630
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286610.002	1449630.005	0.753
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323900.002	1449630.005	0.019
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323930.002	1449630.005	0.078
31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	296	500	NC	1323960.002	1449630.005	0.099
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269780.002	1449600.005	0.857
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269810.002	1449600.005	0.808
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269840.002	1449600.005	0.844
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269870.002	1449600.005	0.849
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269900.002	1449600.005	0.898
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449600.005	0.805
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286040.002	1449600.005	0.798
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286070.002	1449600.005	0.767
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286520.002	1449600.005	0.797
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286550.002	1449600.005	0.693
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286580.002	1449600.005	0.685
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449600.005	0.856

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269750.002	1449570.005	0.820
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269870.002	1449570.005	0.762
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269900.002	1449570.005	0.769
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269930.002	1449570.005	0.892
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269960.002	1449570.005	0.897
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269990.002	1449570.005	0.889
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285950.002	1449570.005	0.756
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285980.002	1449570.005	0.864
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1286010.002	1449570.005	0.843
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286460.002	1449570.005	0.777
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449570.005	0.847
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287510.002	1449570.005	0.772
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269750.002	1449540.005	0.611
20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	247	2000	NC	1269990.002	1449540.005	0.829
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285830.002	1449540.005	0.737
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285860.002	1449540.005	0.814
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285890.002	1449540.005	0.758
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285920.002	1449540.005	0.794
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285950.002	1449540.005	0.848
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285980.002	1449540.005	0.849
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286430.002	1449540.005	0.780
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286460.002	1449540.005	0.802
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449540.005	0.849
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287480.002	1449540.005	0.777
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285770.002	1449510.005	0.799
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285800.002	1449510.005	0.879
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285830.002	1449510.005	0.888
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285860.002	1449510.005	0.890
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285890.002	1449510.005	0.819
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285920.002	1449510.005	0.822
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286430.002	1449510.005	0.775
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449510.005	0.826
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449510.005	0.779
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285710.002	1449480.005	0.785
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285740.002	1449480.005	0.849
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285770.002	1449480.005	0.867
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285800.002	1449480.005	0.892
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285830.002	1449480.005	0.823
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285860.002	1449480.005	0.814
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285890.002	1449480.005	0.708
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286400.002	1449480.005	0.722
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286430.002	1449480.005	0.672
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449480.005	0.853
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449480.005	0.781
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285650.002	1449450.005	0.803
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285680.002	1449450.005	0.859
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285710.002	1449450.005	0.895
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285740.002	1449450.005	0.866
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285770.002	1449450.005	0.735
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285800.002	1449450.005	0.728
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285830.002	1449450.005	0.722

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286370.002	1449450.005	0.788
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286430.002	1449450.005	0.666
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449450.005	0.690
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285560.002	1449420.005	0.601
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285590.002	1449420.005	0.639
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285620.002	1449420.005	0.653
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285650.002	1449420.005	0.799
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285680.002	1449420.005	0.840
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285710.002	1449420.005	0.752
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285740.002	1449420.005	0.749
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285770.002	1449420.005	0.728
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286340.002	1449420.005	0.789
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286370.002	1449420.005	0.814
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449420.005	0.865
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449420.005	0.850
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1449420.005	0.782
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449420.005	0.643
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287480.002	1449420.005	0.572
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285530.002	1449390.005	0.601
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285560.002	1449390.005	0.659
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285590.002	1449390.005	0.790
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286310.002	1449390.005	0.791
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449390.005	0.858
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449390.005	0.850
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1449390.005	0.855
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1449390.005	0.811
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449390.005	0.779
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285500.002	1449360.005	0.639
13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	100	2000	NC	1285530.002	1449360.005	0.840
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286280.002	1449360.005	0.824
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286310.002	1449360.005	0.819
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449360.005	0.859
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449360.005	0.850
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1449360.005	0.852
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1449360.005	0.849
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286190.002	1449330.005	0.816
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286220.002	1449330.005	0.799
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286250.002	1449330.005	0.822
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449330.005	0.859
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449330.005	0.788
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1449330.005	0.813
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286190.002	1449300.005	0.786
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286220.002	1449300.005	0.695
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286250.002	1449300.005	0.692
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449300.005	0.827
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449300.005	0.762
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1449300.005	0.816
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1449270.005	0.858
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449270.005	0.827
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449270.005	0.826
32858	Hexastylis naniflora	297	Dwarf-flowered Heartleaf	2011	2011	2011	Current	CD	2-High	297	99	NC	1292730.002	1449270.005	0.536

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
32858	Hexastylis naniflora	297	Dwarf-flowered Heartleaf	2011	2011	2011	Current	CD	2-High	297	99	NC	1292760.002	1449270.005	0.181
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285500.002	1449240.005	0.572
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285530.002	1449240.005	0.811
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285560.002	1449240.005	0.800
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285590.002	1449240.005	0.782
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285620.002	1449240.005	0.800
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285650.002	1449240.005	0.800
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285680.002	1449240.005	0.800
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285710.002	1449240.005	0.800
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1449240.005	0.856
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1449240.005	0.824
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287360.002	1449240.005	0.872
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285500.002	1449210.005	0.615
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285800.002	1449210.005	0.775
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285830.002	1449210.005	0.772
22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	100	2000	NC	1285860.002	1449210.005	0.791
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449210.005	0.863
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287840.002	1449210.005	0.678
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285530.002	1449180.005	0.744
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285560.002	1449180.005	0.775
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285590.002	1449180.005	0.791
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285620.002	1449180.005	0.787
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285650.002	1449180.005	0.791
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285680.002	1449180.005	0.790
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285710.002	1449180.005	0.784
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285740.002	1449180.005	0.787
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285770.002	1449180.005	0.766
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285800.002	1449180.005	0.722
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449180.005	0.864
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287810.002	1449180.005	0.773
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287840.002	1449180.005	0.682
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285470.002	1449150.005	0.598
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285500.002	1449150.005	0.670
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285530.002	1449150.005	0.800
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285560.002	1449150.005	0.800
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285590.002	1449150.005	0.794
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285770.002	1449150.005	0.762
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285800.002	1449150.005	0.782
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285830.002	1449150.005	0.777
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285860.002	1449150.005	0.731
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285890.002	1449150.005	0.716
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285920.002	1449150.005	0.768
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449150.005	0.865
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287780.002	1449150.005	0.684
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287810.002	1449150.005	0.682
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287840.002	1449150.005	0.680
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285440.002	1449120.005	0.564
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285470.002	1449120.005	0.693
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285500.002	1449120.005	0.769
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285530.002	1449120.005	0.801
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285800.002	1449120.005	0.888

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285830.002	1449120.005	0.782
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286070.002	1449120.005	0.810
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449120.005	0.865
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287690.002	1449120.005	0.870
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287720.002	1449120.005	0.795
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287750.002	1449120.005	0.779
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287780.002	1449120.005	0.688
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285440.002	1449090.005	0.730
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285470.002	1449090.005	0.788
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285500.002	1449090.005	0.780
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286070.002	1449090.005	0.797
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1449090.005	0.825
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449090.005	0.723
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1449090.005	0.772
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287510.002	1449090.005	0.741
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287540.002	1449090.005	0.771
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287570.002	1449090.005	0.863
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287600.002	1449090.005	0.864
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287630.002	1449090.005	0.867
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287660.002	1449090.005	0.830
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287690.002	1449090.005	0.749
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287720.002	1449090.005	0.749
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287750.002	1449090.005	0.745
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287780.002	1449090.005	0.688
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285290.002	1449060.005	0.823
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285320.002	1449060.005	0.769
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285440.002	1449060.005	0.800
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285470.002	1449060.005	0.745
21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	100	2000	NC	1286070.002	1449060.005	0.831
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1449060.005	0.866
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449060.005	0.723
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1449060.005	0.830
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287480.002	1449060.005	0.867
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285290.002	1449030.005	0.748
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285320.002	1449030.005	0.801
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285350.002	1449030.005	0.855
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285410.002	1449030.005	0.836
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285440.002	1449030.005	0.763
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285470.002	1449030.005	0.739
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449030.005	0.726
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287360.002	1449030.005	0.742
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1449030.005	0.874
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1449030.005	0.868
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449030.005	0.869
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271400.002	1449000.005	0.744
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271430.002	1449000.005	0.756
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271460.002	1449000.005	0.754
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271490.002	1449000.005	0.704
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285350.002	1449000.005	0.810
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285380.002	1449000.005	0.836
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285410.002	1449000.005	0.840

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285440.002	1449000.005	0.758
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1285980.002	1449000.005	0.798
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286010.002	1449000.005	0.733
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1449000.005	0.727
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1449000.005	0.722
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287300.002	1449000.005	0.797
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287330.002	1449000.005	0.724
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287360.002	1449000.005	0.708
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1449000.005	0.706
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1449000.005	0.837
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287450.002	1449000.005	0.866
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271370.002	1448970.005	0.750
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271400.002	1448970.005	0.710
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271430.002	1448970.005	0.584
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271460.002	1448970.005	0.570
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285350.002	1448970.005	0.860
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285380.002	1448970.005	0.837
18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	100	2000	NC	1285410.002	1448970.005	0.756
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1285950.002	1448970.005	0.759
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1285980.002	1448970.005	0.758
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286010.002	1448970.005	0.795
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286040.002	1448970.005	0.759
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448970.005	0.723
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287270.002	1448970.005	0.838
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287300.002	1448970.005	0.729
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287330.002	1448970.005	0.704
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287360.002	1448970.005	0.699
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271400.002	1448940.005	0.582
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271430.002	1448940.005	0.520
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1285980.002	1448940.005	0.759
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286010.002	1448940.005	0.764
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286040.002	1448940.005	0.760
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286070.002	1448940.005	0.737
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448940.005	0.720
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287240.002	1448940.005	0.732
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287270.002	1448940.005	0.724
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287300.002	1448940.005	0.699
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286040.002	1448910.005	0.756
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286070.002	1448910.005	0.812
22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	100	2000	NC	1286100.002	1448910.005	0.740
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448910.005	0.691
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448910.005	0.867
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287210.002	1448910.005	0.880
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287240.002	1448910.005	0.782
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1448910.005	0.753
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1448910.005	0.772
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448880.005	0.691
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448880.005	0.869
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287180.002	1448880.005	0.876
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287210.002	1448880.005	0.796
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287390.002	1448880.005	0.582

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287420.002	1448880.005	0.679
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448850.005	0.862
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287150.002	1448850.005	0.915
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287180.002	1448850.005	0.875
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448820.005	0.647
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448820.005	0.862
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448820.005	0.830
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1448820.005	0.695
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1448820.005	0.743
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287060.002	1448820.005	0.915
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287090.002	1448820.005	0.915
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287120.002	1448820.005	0.852
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287150.002	1448820.005	0.885
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287180.002	1448820.005	0.839
20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	247	2000	NC	1271100.002	1448790.005	0.767
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448790.005	0.830
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448790.005	0.695
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1448790.005	0.747
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1448790.005	0.841
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287060.002	1448790.005	0.834
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287090.002	1448790.005	0.806
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287120.002	1448790.005	0.854
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287150.002	1448790.005	0.838
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448760.005	0.650
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448760.005	0.687
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448760.005	0.717
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1448760.005	0.798
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287030.002	1448760.005	0.834
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287060.002	1448760.005	0.825
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287120.002	1448760.005	0.909
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448730.005	0.667
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448730.005	0.698
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448730.005	0.744
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1448730.005	0.720
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448700.005	0.727
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1287000.002	1448700.005	0.721
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448670.005	0.787
20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	247	2000	NC	1270800.002	1448640.005	0.755
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286790.002	1448640.005	0.619
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286820.002	1448640.005	0.633
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286970.002	1448640.005	0.788
20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	247	2000	NC	1270800.002	1448610.005	0.754
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285200.002	1448610.005	0.798
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285230.002	1448610.005	0.870
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285260.002	1448610.005	0.885
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285290.002	1448610.005	0.806
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285320.002	1448610.005	0.862
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285350.002	1448610.005	0.806
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285380.002	1448610.005	0.850
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285410.002	1448610.005	0.685
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286100.002	1448610.005	0.705

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286850.002	1448610.005	0.839
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286880.002	1448610.005	0.840
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448610.005	0.795
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448610.005	0.794
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271790.002	1448580.005	0.279
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271820.002	1448580.005	0.683
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271850.002	1448580.005	0.673
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281270.002	1448580.005	0.740
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285200.002	1448580.005	0.877
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285230.002	1448580.005	0.881
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285380.002	1448580.005	0.806
22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	100	2000	NC	1285410.002	1448580.005	0.777
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286100.002	1448580.005	0.790
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286130.002	1448580.005	0.674
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286160.002	1448580.005	0.619
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286820.002	1448580.005	0.777
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286850.002	1448580.005	0.728
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286880.002	1448580.005	0.739
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286910.002	1448580.005	0.741
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448580.005	0.414
20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	247	2000	NC	1270530.002	1448550.005	0.777
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271790.002	1448550.005	0.768
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271820.002	1448550.005	0.641
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281270.002	1448550.005	0.831
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286130.002	1448550.005	0.790
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286220.002	1448550.005	0.652
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286250.002	1448550.005	0.697
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286370.002	1448550.005	0.505
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286820.002	1448550.005	0.757
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286850.002	1448550.005	0.751
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286880.002	1448550.005	0.752
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286940.002	1448550.005	0.769
20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	247	2000	NC	1270560.002	1448520.005	0.669
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271760.002	1448520.005	0.773
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271790.002	1448520.005	0.771
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271820.002	1448520.005	0.378
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281210.002	1448520.005	0.542
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281240.002	1448520.005	0.831
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286250.002	1448520.005	0.793
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286280.002	1448520.005	0.668
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286310.002	1448520.005	0.733
1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	100	2000	NC	1286340.002	1448520.005	0.746
12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	100	2000	NC	1286820.002	1448520.005	0.804
21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	247	2000	NC	1271790.002	1448490.005	0.739
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1448490.005	0.544
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281210.002	1448490.005	0.834
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1448460.005	0.843
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281210.002	1448460.005	0.746
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1448430.005	0.846
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1448430.005	0.805
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281120.002	1448400.005	0.851

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1448400.005	0.846
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1448370.005	0.857
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281120.002	1448370.005	0.858
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1448370.005	0.807
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281060.002	1448340.005	0.859
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1448340.005	0.859
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281120.002	1448340.005	0.840
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1448340.005	0.800
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1448340.005	0.797
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281210.002	1448340.005	0.386
22387	Hexastylis naniflora	239	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001	Current	D	2-High	100	2000	NC	1286220.002	1448340.005	0.746
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281030.002	1448310.005	0.861
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281060.002	1448310.005	0.856
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1448310.005	0.849
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281120.002	1448310.005	0.826
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1448310.005	0.716
22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	100	2000	NC	1285920.002	1448310.005	0.647
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448310.005	0.826
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281030.002	1448280.005	0.852
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281060.002	1448280.005	0.814
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1448280.005	0.710
22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	100	2000	NC	1285830.002	1448280.005	0.620
22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	100	2000	NC	1285860.002	1448280.005	0.816
22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	100	2000	NC	1285890.002	1448280.005	0.828
22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	100	2000	NC	1285920.002	1448280.005	0.797
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448280.005	0.831
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281000.002	1448250.005	0.824
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281030.002	1448250.005	0.761
22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	100	2000	NC	1285860.002	1448250.005	0.774
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448250.005	0.891
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287780.002	1448250.005	0.840
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287870.002	1448250.005	0.827
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287900.002	1448250.005	0.823
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280970.002	1448220.005	0.824
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448220.005	0.890
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287780.002	1448220.005	0.888
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287810.002	1448220.005	0.876
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287840.002	1448220.005	0.877
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287870.002	1448220.005	0.876
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287900.002	1448220.005	0.822
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286550.002	1448190.005	0.811
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286580.002	1448190.005	0.815
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286610.002	1448190.005	0.809
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286640.002	1448190.005	0.807
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287720.002	1448190.005	0.879
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448190.005	0.846
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287780.002	1448190.005	0.795
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287810.002	1448190.005	0.794
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287840.002	1448190.005	0.791
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287870.002	1448190.005	0.728
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287900.002	1448190.005	0.702

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286520.002	1448160.005	0.812
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286550.002	1448160.005	0.809
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286580.002	1448160.005	0.803
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287690.002	1448160.005	0.886
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287720.002	1448160.005	0.869
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448160.005	0.694
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287780.002	1448160.005	0.690
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287810.002	1448160.005	0.631
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287840.002	1448160.005	0.609
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287690.002	1448130.005	0.882
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287720.002	1448130.005	0.790
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287750.002	1448130.005	0.671
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287780.002	1448130.005	0.607
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287810.002	1448130.005	0.685
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283880.002	1448100.005	0.857
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287660.002	1448100.005	0.875
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1287690.002	1448100.005	0.766
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283820.002	1448070.005	0.854
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283850.002	1448070.005	0.761
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283880.002	1448070.005	0.775
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280820.002	1448040.005	0.654
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283790.002	1448040.005	0.849
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283820.002	1448040.005	0.792
18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	100	2000	NC	1286310.002	1448040.005	0.714
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280700.002	1448010.005	0.749
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280970.002	1448010.005	0.803
22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	100	2000	NC	1283790.002	1448010.005	0.859
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288290.002	1448010.005	0.876
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280760.002	1447980.005	0.772
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280880.002	1447980.005	0.865
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280910.002	1447980.005	0.865
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288260.002	1447980.005	0.721
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288410.002	1447980.005	0.865
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288440.002	1447980.005	0.864
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288350.002	1447950.005	0.844
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288380.002	1447950.005	0.779
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288410.002	1447950.005	0.770
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288440.002	1447950.005	0.699
24748	Hexastylis naniflora	267	Dwarf-flowered Heartleaf	2006-07-06	2006-07-06	2006-07-06	Current	CD	2-High	99	2000	NC	1267650.002	1447920.005	0.800
24748	Hexastylis naniflora	267	Dwarf-flowered Heartleaf	2006-07-06	2006-07-06	2006-07-06	Current	CD	2-High	99	2000	NC	1267680.002	1447920.005	0.842
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280640.002	1447920.005	0.684
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280730.002	1447920.005	0.687
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288320.002	1447920.005	0.784
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288350.002	1447920.005	0.780
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280550.002	1447890.005	0.710
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280580.002	1447890.005	0.749
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280610.002	1447890.005	0.646
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280700.002	1447890.005	0.678
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288560.002	1447890.005	0.820
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288590.002	1447890.005	0.815
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280520.002	1447860.005	0.529

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280550.002	1447860.005	0.648
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288500.002	1447860.005	0.831
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288530.002	1447860.005	0.739
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288560.002	1447860.005	0.734
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288590.002	1447860.005	0.625
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288620.002	1447860.005	0.693
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288380.002	1447740.005	0.661
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288410.002	1447740.005	0.810
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288380.002	1447650.005	0.713
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1279590.002	1447560.005	0.807
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1279620.002	1447560.005	0.811
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1279590.002	1447530.005	0.758
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288380.002	1447530.005	0.740
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281660.002	1447500.005	0.366
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1447500.005	0.780
24749	Hexastylis naniflora	268	Dwarf-flowered Heartleaf	2006-07-06	2006-07-06	2006-07-06	Current	D	2-High	99	2000	NC	1267380.002	1447470.005	0.318
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281450.002	1447470.005	0.621
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281360.002	1447440.005	0.529
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281390.002	1447440.005	0.734
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281420.002	1447440.005	0.791
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288380.002	1447440.005	0.661
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288410.002	1447440.005	0.762
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288440.002	1447440.005	0.749
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288470.002	1447440.005	0.772
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288500.002	1447440.005	0.719
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288530.002	1447440.005	0.824
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288650.002	1447440.005	0.782
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281300.002	1447410.005	0.529
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281330.002	1447410.005	0.589
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281360.002	1447410.005	0.793
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288410.002	1447410.005	0.638
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288440.002	1447410.005	0.663
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288620.002	1447410.005	0.813
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288650.002	1447410.005	0.780
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291020.002	1447410.005	0.760
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1447380.005	0.229
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1447380.005	0.574
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281210.002	1447380.005	0.569
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281240.002	1447380.005	0.589
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281270.002	1447380.005	0.720
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288590.002	1447380.005	0.755
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288620.002	1447380.005	0.733
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291020.002	1447380.005	0.755
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291050.002	1447350.005	0.743
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1268220.002	1447320.005	0.671
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291050.002	1447320.005	0.748
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291080.002	1447320.005	0.750
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1268160.002	1447290.005	0.687
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291050.002	1447290.005	0.807
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1447290.005	0.736
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1267890.002	1447260.005	0.501

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1267920.002	1447260.005	0.526
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1267950.002	1447260.005	0.593
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1267980.002	1447260.005	0.635
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1268010.002	1447260.005	0.637
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1268040.002	1447260.005	0.635
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1268130.002	1447260.005	0.691
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291050.002	1447260.005	0.795
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1447260.005	0.758
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291050.002	1447230.005	0.795
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1447230.005	0.850
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291050.002	1447200.005	0.793
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1447200.005	0.837
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281840.002	1447170.005	0.339
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291080.002	1447170.005	0.755
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1447170.005	0.675
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281810.002	1447140.005	0.348
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281840.002	1447140.005	0.764
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281870.002	1447140.005	0.772
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291080.002	1447140.005	0.675
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291110.002	1447140.005	0.716
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1447140.005	0.696
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1269030.002	1447110.005	0.547
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1269060.002	1447110.005	0.551
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281780.002	1447110.005	0.772
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281810.002	1447110.005	0.757
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291110.002	1447110.005	0.613
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1447110.005	0.675
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1268970.002	1447080.005	0.664
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1269000.002	1447080.005	0.688
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1269030.002	1447080.005	0.761
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1447080.005	0.675
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1268940.002	1447050.005	0.763
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1268970.002	1447050.005	0.768
20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	99	2000	NC	1269000.002	1447050.005	0.757
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1447050.005	0.593
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1447020.005	0.593
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1446990.005	0.738
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1446960.005	0.485
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281720.002	1446960.005	0.594
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281750.002	1446960.005	0.730
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281780.002	1446960.005	0.802
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281810.002	1446960.005	0.580
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1446960.005	0.698
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291200.002	1446960.005	0.743
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291230.002	1446960.005	0.796
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280820.002	1446930.005	0.900
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280850.002	1446930.005	0.896
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280880.002	1446930.005	0.891
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1446930.005	0.659
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1446930.005	0.678
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268460.002	1446900.005	0.635

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21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268490.002	1446900.005	0.623
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280820.002	1446900.005	0.896
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280850.002	1446900.005	0.898
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280880.002	1446900.005	0.894
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1446900.005	0.572
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446870.005	0.766
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268460.002	1446870.005	0.637
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280850.002	1446870.005	0.891
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1446870.005	0.552
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446840.005	0.759
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268430.002	1446840.005	0.641
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281720.002	1446840.005	0.317
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281750.002	1446840.005	0.802
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1446840.005	0.512
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446810.005	0.768
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268400.002	1446810.005	0.643
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268430.002	1446810.005	0.591
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1446810.005	0.123
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281720.002	1446810.005	0.753
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291140.002	1446810.005	0.512
25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	274	500	NC	1291170.002	1446810.005	0.661
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265400.002	1446780.005	0.789
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446780.005	0.773
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446780.005	0.759
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265490.002	1446780.005	0.761
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268370.002	1446780.005	0.643
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268400.002	1446780.005	0.639
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446750.005	0.805
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265400.002	1446750.005	0.791
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446750.005	0.781
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446750.005	0.770
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268310.002	1446750.005	0.588
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268340.002	1446750.005	0.592
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268370.002	1446750.005	0.641
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280880.002	1446750.005	0.715
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280910.002	1446750.005	0.715
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446720.005	0.811
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446720.005	0.777
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268280.002	1446720.005	0.667
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268310.002	1446720.005	0.586
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280910.002	1446720.005	0.710
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280940.002	1446720.005	0.768
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1280970.002	1446720.005	0.787
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281000.002	1446720.005	0.864
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446690.005	0.755
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446690.005	0.787
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268280.002	1446690.005	0.641
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281000.002	1446690.005	0.825
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281030.002	1446690.005	0.862
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1446690.005	0.833
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446660.005	0.867

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2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446660.005	0.812
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265430.002	1446660.005	0.790
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446660.005	0.772
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268250.002	1446660.005	0.652
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1446660.005	0.775
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281120.002	1446660.005	0.859
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1446660.005	0.861
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446630.005	0.819
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446630.005	0.816
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446630.005	0.776
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265490.002	1446630.005	0.673
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268220.002	1446630.005	0.654
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1446630.005	0.859
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1446630.005	0.855
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446600.005	0.818
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446600.005	0.787
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265490.002	1446600.005	0.777
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265520.002	1446600.005	0.692
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1446600.005	0.862
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1446600.005	0.417
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281720.002	1446600.005	0.850
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446570.005	0.865
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446570.005	0.818
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446570.005	0.802
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265490.002	1446570.005	0.802
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265520.002	1446570.005	0.788
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268190.002	1446570.005	0.609
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281210.002	1446570.005	0.854
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281630.002	1446570.005	0.662
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281660.002	1446570.005	0.347
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1446570.005	0.741
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281720.002	1446570.005	0.737
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281750.002	1446570.005	0.837
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446540.005	0.866
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446540.005	0.819
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265460.002	1446540.005	0.757
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265490.002	1446540.005	0.804
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265520.002	1446540.005	0.782
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268190.002	1446540.005	0.663
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281180.002	1446540.005	0.710
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281660.002	1446540.005	0.735
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281690.002	1446540.005	0.733
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281720.002	1446540.005	0.730
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281750.002	1446540.005	0.733
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281780.002	1446540.005	0.839
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281810.002	1446540.005	0.839
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281840.002	1446540.005	0.803
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281870.002	1446540.005	0.837
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281900.002	1446540.005	0.826
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281930.002	1446540.005	0.822
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281960.002	1446540.005	0.817

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446510.005	0.818
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446510.005	0.862
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265490.002	1446510.005	0.808
22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265520.002	1446510.005	0.791
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281150.002	1446510.005	0.708
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281750.002	1446510.005	0.699
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281780.002	1446510.005	0.847
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281810.002	1446510.005	0.831
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281900.002	1446510.005	0.821
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281930.002	1446510.005	0.745
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446480.005	0.820
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446480.005	0.816
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281090.002	1446480.005	0.714
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281120.002	1446480.005	0.704
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446450.005	0.820
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446450.005	0.791
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273410.002	1446450.005	0.845
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273440.002	1446450.005	0.840
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273470.002	1446450.005	0.828
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281480.002	1446450.005	0.634
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446420.005	0.821
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446420.005	0.822
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446420.005	0.776
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273380.002	1446420.005	0.716
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273410.002	1446420.005	0.834
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273440.002	1446420.005	0.776
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273470.002	1446420.005	0.683
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281060.002	1446420.005	0.699
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281480.002	1446420.005	0.634
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446390.005	0.870
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446390.005	0.822
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446390.005	0.859
21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	245	2000	NC	1273380.002	1446390.005	0.598
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281480.002	1446390.005	0.640
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446390.005	0.675
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446360.005	0.821
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446360.005	0.823
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446360.005	0.823
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265070.002	1446360.005	0.762
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268160.002	1446360.005	0.665
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273260.002	1446360.005	0.845
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273290.002	1446360.005	0.703
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281480.002	1446360.005	0.726
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446360.005	0.763
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446330.005	0.872
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446330.005	0.824
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446330.005	0.826
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265070.002	1446330.005	0.709
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273230.002	1446330.005	0.854
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273260.002	1446330.005	0.840
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273290.002	1446330.005	0.610

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281450.002	1446330.005	0.726
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281480.002	1446330.005	0.643
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446330.005	0.763
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1264980.002	1446300.005	0.874
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446300.005	0.824
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446300.005	0.859
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268130.002	1446300.005	0.618
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268160.002	1446300.005	0.611
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273200.002	1446300.005	0.786
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273230.002	1446300.005	0.840
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273260.002	1446300.005	0.744
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273290.002	1446300.005	0.626
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281480.002	1446300.005	0.500
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446300.005	0.727
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446270.005	0.825
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446270.005	0.859
20354	Hexastylis naniflora	121	Dwarf-flowered Heartleaf	2004-05-15	2004-05-15	2004-05-15	Current	B	2-High	99	2000	NC	1267230.002	1446270.005	0.867
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273140.002	1446270.005	0.795
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273170.002	1446270.005	0.781
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446270.005	0.382
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265010.002	1446240.005	0.866
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446240.005	0.739
20354	Hexastylis naniflora	121	Dwarf-flowered Heartleaf	2004-05-15	2004-05-15	2004-05-15	Current	B	2-High	99	2000	NC	1267230.002	1446240.005	0.863
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273110.002	1446240.005	0.796
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246110.002	1446210.005	0.138
2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	99	2000	NC	1265040.002	1446210.005	0.790
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273110.002	1446210.005	0.786
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446210.005	0.740
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246170.002	1446180.005	0.354
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273080.002	1446180.005	0.798
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446180.005	0.641
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246230.002	1446150.005	0.362
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273050.002	1446150.005	0.802
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281510.002	1446150.005	0.597
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246260.002	1446120.005	0.362
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273020.002	1446120.005	0.702
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273050.002	1446120.005	0.799
26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	276	2000	NC	1281540.002	1446120.005	0.667
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246290.002	1446090.005	0.371
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273050.002	1446090.005	0.682
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273080.002	1446090.005	0.675
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273110.002	1446090.005	0.760
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273140.002	1446090.005	0.754
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273170.002	1446090.005	0.752
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273200.002	1446090.005	0.752
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246320.002	1446060.005	0.367
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273200.002	1446060.005	0.750
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246350.002	1446030.005	0.332
20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	245	2000	NC	1273230.002	1446030.005	0.788
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288316.727	1447836.831	0.708
22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	100	2000	NC	1288320.584	1447847.387	0.744

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	99	2000	NC	1268133.035	1446419.698	0.676
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1267511.796	1446916.712	0.569
17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	99	2000	NC	1267734.371	1446995.529	0.640
20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	247	2000	NC	1270737.027	1448589.652	0.752
21405	Hexastylis naniflora	174	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-03	Current	D	2-High	247	2000	NC	1270593.346	1448867.041	0.713
20333	Hexastylis naniflora	114	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-03	Current	D	2-High	247	2000	NC	1270699.913	1448904.6	0.734
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246440.002	1445910.005	0.358
28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	287	500	NC	1246470.002	1445880.005	0.348
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269720.002	1445820.005	0.189
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269750.002	1445820.005	0.192
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269780.002	1445820.005	0.417
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265760.002	1445790.005	0.720
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265790.002	1445790.005	0.716
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265820.002	1445790.005	0.784
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265910.002	1445790.005	0.814
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265940.002	1445790.005	0.774
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265970.002	1445790.005	0.778
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265820.002	1445760.005	0.770
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265910.002	1445760.005	0.778
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265940.002	1445760.005	0.767
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265970.002	1445760.005	0.769
22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	99	2000	NC	1265940.002	1445730.005	0.714
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264830.002	1445700.005	0.782
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445700.005	0.816
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445700.005	0.773
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269750.002	1445700.005	0.742
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445670.005	0.785
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445670.005	0.838
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445670.005	0.778
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445670.005	0.809
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269750.002	1445670.005	0.212
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269780.002	1445670.005	0.747
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445640.005	0.782
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445640.005	0.819
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265310.002	1445640.005	0.729
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265340.002	1445640.005	0.817
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445640.005	0.777
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445640.005	0.864
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445640.005	0.860
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445640.005	0.851
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445640.005	0.813
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445640.005	0.799
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269780.002	1445640.005	0.171
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269810.002	1445640.005	0.757
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445610.005	0.780
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445610.005	0.819
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265340.002	1445610.005	0.814
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445610.005	0.768
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445610.005	0.864
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445610.005	0.866
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445610.005	0.889

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445610.005	0.799
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445610.005	0.738
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269840.002	1445610.005	0.759
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445580.005	0.780
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445580.005	0.822
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445580.005	0.859
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265340.002	1445580.005	0.743
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445580.005	0.821
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445580.005	0.852
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445580.005	0.863
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445580.005	0.883
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445580.005	0.662
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445580.005	0.728
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269810.002	1445580.005	0.713
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269840.002	1445580.005	0.701
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445550.005	0.873
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445550.005	0.822
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445550.005	0.828
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265340.002	1445550.005	0.712
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445550.005	0.735
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445550.005	0.779
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445550.005	0.790
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445550.005	0.816
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445550.005	0.658
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445550.005	0.675
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269660.002	1445550.005	0.742
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269690.002	1445550.005	0.745
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269720.002	1445550.005	0.747
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269750.002	1445550.005	0.713
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269780.002	1445550.005	0.750
10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	99	2000	NC	1269810.002	1445550.005	0.583
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445520.005	0.820
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445520.005	0.819
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445520.005	0.801
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265340.002	1445520.005	0.706
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445520.005	0.727
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445520.005	0.795
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445520.005	0.837
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445520.005	0.814
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445520.005	0.614
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445520.005	0.671
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264860.002	1445490.005	0.819
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445490.005	0.742
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445490.005	0.732
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264950.002	1445490.005	0.751
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445490.005	0.718
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445490.005	0.737
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445490.005	0.829
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445490.005	0.761
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445490.005	0.596
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445460.005	0.751

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445460.005	0.734
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264950.002	1445460.005	0.754
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445460.005	0.714
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445460.005	0.729
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445460.005	0.828
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445460.005	0.759
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445460.005	0.592
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445460.005	0.580
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270320.002	1445460.005	0.589
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445430.005	0.748
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445430.005	0.744
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264950.002	1445430.005	0.784
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264980.002	1445430.005	0.689
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445430.005	0.714
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445430.005	0.731
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445430.005	0.821
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445430.005	0.759
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445430.005	0.660
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445430.005	0.578
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270380.002	1445430.005	0.741
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270410.002	1445430.005	0.820
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270470.002	1445430.005	0.808
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270500.002	1445430.005	0.819
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270530.002	1445430.005	0.710
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270560.002	1445430.005	0.800
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270650.002	1445430.005	0.807
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270680.002	1445430.005	0.805
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264890.002	1445400.005	0.795
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445400.005	0.745
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264950.002	1445400.005	0.732
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264980.002	1445400.005	0.747
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445400.005	0.577
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445400.005	0.779
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445400.005	0.820
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445400.005	0.759
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445400.005	0.751
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445400.005	0.578
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270470.002	1445400.005	0.817
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270590.002	1445400.005	0.718
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270620.002	1445400.005	0.709
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264920.002	1445370.005	0.701
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264950.002	1445370.005	0.747
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264980.002	1445370.005	0.726
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265010.002	1445370.005	0.630
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445370.005	0.555
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445370.005	0.708
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445370.005	0.752
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445370.005	0.685
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445370.005	0.689
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445370.005	0.574
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266270.002	1445370.005	0.846

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270470.002	1445370.005	0.816
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264950.002	1445340.005	0.697
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264980.002	1445340.005	0.730
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265010.002	1445340.005	0.687
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445340.005	0.562
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445340.005	0.702
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445340.005	0.746
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445340.005	0.740
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445340.005	0.685
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445340.005	0.612
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265550.002	1445340.005	0.588
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266240.002	1445340.005	0.794
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266270.002	1445340.005	0.838
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266300.002	1445340.005	0.800
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270500.002	1445340.005	0.805
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264980.002	1445310.005	0.745
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265010.002	1445310.005	0.708
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265040.002	1445310.005	0.630
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265370.002	1445310.005	0.560
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445310.005	0.684
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445310.005	0.735
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445310.005	0.735
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445310.005	0.739
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445310.005	0.616
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265550.002	1445310.005	0.590
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266180.002	1445310.005	0.704
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266210.002	1445310.005	0.770
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266240.002	1445310.005	0.850
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266270.002	1445310.005	0.823
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266300.002	1445310.005	0.790
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1264980.002	1445280.005	0.737
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265010.002	1445280.005	0.801
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265040.002	1445280.005	0.708
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265400.002	1445280.005	0.621
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445280.005	0.708
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445280.005	0.712
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445280.005	0.729
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445280.005	0.657
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265550.002	1445280.005	0.613
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266150.002	1445280.005	0.785
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266180.002	1445280.005	0.801
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266210.002	1445280.005	0.841
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266240.002	1445280.005	0.798
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270530.002	1445280.005	0.798
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265040.002	1445250.005	0.742
17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	99	2000	NC	1265070.002	1445250.005	0.632
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265430.002	1445250.005	0.609
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265460.002	1445250.005	0.668
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265490.002	1445250.005	0.651
21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	99	2000	NC	1265520.002	1445250.005	0.645
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266060.002	1445250.005	0.657

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266090.002	1445250.005	0.732
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266120.002	1445250.005	0.824
22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	99	2000	NC	1266150.002	1445250.005	0.788
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270530.002	1445250.005	0.803
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270590.002	1445220.005	0.793
20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	99	2000	NC	1270620.002	1445190.005	0.788
12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	99	2000	NC	1269330.002	1445130.005	0.605
12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	99	2000	NC	1269360.002	1445130.005	0.566
12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	99	2000	NC	1269300.002	1445100.005	0.612
4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	99	2000	NC	1270380.002	1445100.005	0.788
4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	99	2000	NC	1270410.002	1445100.005	0.689
12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	99	2000	NC	1269300.002	1445070.005	0.329
4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	99	2000	NC	1270230.002	1444980.005	0.814
4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	99	2000	NC	1270260.002	1444950.005	0.802
385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	23	2000	NC	1253130.002	1444920.005	0.613
385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	23	2000	NC	1253130.002	1444890.005	0.622
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271040.002	1444890.005	0.789
385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	23	2000	NC	1253130.002	1444860.005	0.604
9779	Hexastylis naniflora	53	Dwarf-flowered Heartleaf	2003-05	2003-05	2001-04-02	Current	D	2-High	99	2000	NC	1268400.002	1444860.005	0.329
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271010.002	1444860.005	0.685
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271040.002	1444860.005	0.757
385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	23	2000	NC	1253130.002	1444830.005	0.608
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271010.002	1444830.005	0.693
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271040.002	1444830.005	0.695
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271070.002	1444830.005	0.784
385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	23	2000	NC	1253130.002	1444800.005	0.622
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270980.002	1444800.005	0.691
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271010.002	1444800.005	0.697
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271040.002	1444800.005	0.791
385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	23	2000	NC	1253130.002	1444770.005	0.618
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270980.002	1444770.005	0.764
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1271010.002	1444770.005	0.788
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270920.002	1444740.005	0.766
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270950.002	1444740.005	0.802
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270890.002	1444710.005	0.757
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270920.002	1444710.005	0.800
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270890.002	1444680.005	0.755
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270860.002	1444650.005	0.763
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270860.002	1444620.005	0.712
7324	Hexastylis naniflora	37	Dwarf-flowered Heartleaf	2005	2005	1994-06	Current	C	2-High	99	2000	NC	1267050.002	1444590.005	0.879
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270860.002	1444590.005	0.775
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270860.002	1444560.005	0.810
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270860.002	1444530.005	0.807
7324	Hexastylis naniflora	37	Dwarf-flowered Heartleaf	2005	2005	1994-06	Current	C	2-High	99	2000	NC	1267020.002	1444500.005	0.870
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270830.002	1444500.005	0.717
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270860.002	1444500.005	0.804
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270830.002	1444470.005	0.719
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270830.002	1444440.005	0.719
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270800.002	1444410.005	0.720
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270830.002	1444410.005	0.811
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270800.002	1444380.005	0.721

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	99	2000	NC	1270800.002	1444350.005	0.814
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273110.002	1444200.005	0.816
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273080.002	1444170.005	0.783
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273110.002	1444170.005	0.872
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273140.002	1444170.005	0.856
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273050.002	1444140.005	0.753
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273140.002	1444140.005	0.857
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273170.002	1444080.005	0.851
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1273170.002	1444050.005	0.855
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272630.002	1443990.005	0.828
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272660.002	1443990.005	0.827
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272660.002	1443960.005	0.772
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272360.002	1443930.005	0.818
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272690.002	1443930.005	0.780
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272390.002	1443900.005	0.827
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272420.002	1443900.005	0.746
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272690.002	1443900.005	0.782
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272420.002	1443870.005	0.825
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272720.002	1443870.005	0.832
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272750.002	1443870.005	0.771
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261260.002	1443840.005	0.661
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272420.002	1443840.005	0.837
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272750.002	1443840.005	0.819
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272780.002	1443840.005	0.769
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261050.002	1443810.005	0.735
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261080.002	1443810.005	0.727
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261110.002	1443810.005	0.742
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261140.002	1443810.005	0.742
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261170.002	1443810.005	0.659
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261200.002	1443810.005	0.659
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261230.002	1443810.005	0.649
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261260.002	1443810.005	0.651
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261290.002	1443810.005	0.663
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261320.002	1443810.005	0.663
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261350.002	1443810.005	0.664
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261380.002	1443810.005	0.664
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272450.002	1443810.005	0.794
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272810.002	1443810.005	0.860
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272840.002	1443810.005	0.874
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272870.002	1443810.005	0.865
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272900.002	1443810.005	0.857
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261050.002	1443780.005	0.725
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261320.002	1443780.005	0.652
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261350.002	1443780.005	0.652
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261380.002	1443780.005	0.263
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261410.002	1443780.005	0.257
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272870.002	1443780.005	0.865
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272900.002	1443780.005	0.870
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272930.002	1443780.005	0.861
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261050.002	1443750.005	0.649
21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	125	2000	NC	1261470.002	1443750.005	0.322

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272480.002	1443720.005	0.815
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272480.002	1443690.005	0.811
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272510.002	1443630.005	0.758
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272510.002	1443600.005	0.779
4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	248	500	NC	1266300.002	1443510.005	0.783
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272600.002	1443510.005	0.840
4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	248	500	NC	1266300.002	1443480.005	0.679
4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	248	500	NC	1266330.002	1443480.005	0.599
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272630.002	1443480.005	0.837
4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	248	500	NC	1266330.002	1443450.005	0.679
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272720.002	1443420.005	0.838
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272750.002	1443390.005	0.819
14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	99	2000	NC	1272810.002	1443360.005	0.822
3553	Hexastylis naniflora	76	Dwarf-flowered Heartleaf	2015-05-19	2015-05-19	2004-05-03	Current	BC	2-High	99	2000	NC	1273710.002	1443240.005	0.659
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267830.002	1442550.005	0.459
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267800.002	1442520.005	0.621
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267830.002	1442520.005	0.627
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267860.002	1442520.005	0.611
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267770.002	1442490.005	0.565
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267800.002	1442490.005	0.611
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267830.002	1442490.005	0.621
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267860.002	1442490.005	0.511
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442460.005	0.663
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267770.002	1442460.005	0.706
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267800.002	1442460.005	0.698
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442430.005	0.609
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267770.002	1442430.005	0.704
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442400.005	0.694
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267770.002	1442400.005	0.705
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442370.005	0.698
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267770.002	1442370.005	0.703
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442340.005	0.701
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267770.002	1442340.005	0.698
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442310.005	0.703
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267710.002	1442280.005	0.651
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442280.005	0.698
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267710.002	1442250.005	0.686
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267740.002	1442250.005	0.701
8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	248	500	NC	1267710.002	1442220.005	0.696
4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	99	2000	NC	1270171.343	1444998.916	0.823
3553	Hexastylis naniflora	76	Dwarf-flowered Heartleaf	2015-05-19	2015-05-19	2004-05-03	Current	BC	2-High	99	2000	NC	1273726.806	1443170.59	0.775
21403	Hexastylis naniflora	172	Dwarf-flowered Heartleaf	2012-03-12	2012-03-12	2003-05-14	Current	D	2-High	99	2000	NC	1273686.203	1442978.818	0.746
20256	Hexastylis naniflora	91	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	245	2000	NC	1272424.1	1445950.524	0.663
37915		319											1273499.852	1443293.951	0.836
36693	Hexastylis naniflora	311	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2007-11-28	Current	A	2-High	311	500	NC	1251450.002	1441920.005	0.249
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277220.002	1437840.005	0.716
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277100.002	1437660.005	0.320
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277130.002	1437660.005	0.322
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277160.002	1437660.005	0.713
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277130.002	1437630.005	0.325
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276680.002	1437240.005	0.687

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	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276710.002	1437240.005	0.685
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276740.002	1437240.005	0.659
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276770.002	1437240.005	0.203
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276680.002	1437210.005	0.697
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278240.002	1436670.005	0.726
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277340.002	1436640.005	0.710
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277370.002	1436640.005	0.712
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278210.002	1436640.005	0.719
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277430.002	1436610.005	0.699
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277460.002	1436610.005	0.716
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277490.002	1436610.005	0.720
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278210.002	1436610.005	0.726
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277610.002	1436580.005	0.720
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278180.002	1436580.005	0.719
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278150.002	1436550.005	0.728
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278180.002	1436550.005	0.493
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278150.002	1436520.005	0.718
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278150.002	1436490.005	0.484
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278120.002	1436460.005	0.491
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278150.002	1436460.005	0.482
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278120.002	1436430.005	0.486
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278150.002	1436430.005	0.403
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278090.002	1436400.005	0.497
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278120.002	1436400.005	0.486
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1278270.201	1436724.456	0.334
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277685.605	1436515.531	0.724
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1277721.636	1436459.279	0.722
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276596.647	1437170.269	0.308
	Hexastylis naniflora		Dwarf-flowered Heartleaf							3	2000	SC	1276574.931	1437154.523	0.223
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1267590.002	1432770.005	0.703
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1267620.002	1432770.005	0.705
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1268640.002	1432710.005	0.533
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1267440.002	1432680.005	0.694
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1267350.002	1432620.005	0.692
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1268850.002	1432560.005	0.812
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1266840.002	1432500.005	0.329
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271700.002	1432410.005	0.685
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271700.002	1432380.005	0.597
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271790.002	1432260.005	0.624
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271820.002	1432260.005	0.547
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271400.002	1432200.005	0.421
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271430.002	1432200.005	0.410
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269630.002	1432050.005	0.721
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271580.002	1432020.005	0.537
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271610.002	1431960.005	0.595
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271670.002	1431930.005	0.630
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271700.002	1431930.005	0.505
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269090.002	1431900.005	0.390
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269180.002	1431870.005	0.812
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269150.002	1431840.005	0.713
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269270.002	1431840.005	0.729

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	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269270.002	1431810.005	0.802
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1270290.002	1431630.005	0.321
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1270290.002	1431600.005	0.319
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271070.002	1431270.005	0.615
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271140.904	1431243.357	0.515
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271839.979	1431852.731	0.393
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1270216.76	1432005.233	0.461
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1268998.768	1431858.019	0.423
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269732.547	1432051.766	0.630
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269564.774	1432059.834	0.730
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1269481.884	1432095.536	0.703
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271264.686	1432760.98	0.764
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1266022.481	1431931.821	0.724
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1268915.107	1432552.503	0.780
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271107.627	1432924.401	0.733
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271031.368	1432948.706	0.643
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1268683.268	1432764.414	0.608
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1266565.594	1432449.253	0.645
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1266608.648	1432473.057	0.641
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1268021.215	1432781.926	0.690
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1267887.858	1432778.852	0.701
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1273980.002	1428660.005	0.612
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1274100.002	1428660.005	0.608
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1273980.002	1428630.005	0.627
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1274010.002	1428630.005	0.613
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1274070.002	1428630.005	0.614
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1274100.002	1428630.005	0.608
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1273980.002	1428600.005	0.624
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1274070.002	1428570.005	0.581
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1273590.002	1427520.005	0.794
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1273632.548	1427581.4	0.818
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1274067.796	1428432.046	0.575
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1272673.576	1428410.354	0.734
	Hexastylis naniflora		Dwarf-flowered Heartleaf							1	2000	SC	1271866.924	1429582.397	0.660
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274700.002	1421520.005	0.397
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274700.002	1421490.005	0.298
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274670.002	1421430.005	0.368
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274460.002	1421340.005	0.301
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274460.002	1421310.005	0.215
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274460.002	1421280.005	0.268
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274940.002	1421280.005	0.616
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1275000.002	1421280.005	0.647
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1275030.002	1421280.005	0.633
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1275060.002	1421280.005	0.581
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1275090.002	1421280.005	0.521
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274490.002	1421250.005	0.318
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274850.002	1421250.005	0.602
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274880.002	1421250.005	0.703
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274910.002	1421250.005	0.709
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274970.002	1421250.005	0.611
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1275000.002	1421250.005	0.609

EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	PopNumber	EstPlantsMax	State	X	Y	Maxent Score
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274520.002	1421220.005	0.603
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274550.002	1421220.005	0.610
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274580.002	1421220.005	0.321
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274610.002	1421220.005	0.321
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274820.002	1421220.005	0.263
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274850.002	1421220.005	0.587
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274880.002	1421220.005	0.611
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274910.002	1421220.005	0.634
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274520.002	1421190.005	0.293
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274550.002	1421190.005	0.603
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274580.002	1421190.005	0.620
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274610.002	1421190.005	0.314
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274640.002	1421190.005	0.313
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274670.002	1421190.005	0.299
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274820.002	1421190.005	0.305
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274670.002	1421160.005	0.620
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274700.002	1421160.005	0.623
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274730.002	1421160.005	0.326
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274760.002	1421160.005	0.653
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274790.002	1421160.005	0.675
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274820.002	1421160.005	0.610
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274730.002	1421130.005	0.666
	Hexastylis naniflora		Dwarf-flowered Heartleaf							2	2000	SC	1274760.002	1421130.005	0.675
													1240369.49	1419083.964	0.005
													1240676.032	1419026.488	0.006
													1225042.373	1411324.612	0.003

From: Marshall, Michael E
To: Endries, Mark
Cc: Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 2:11:08 PM
Attachments: HENA NCNHP EO Data Summary_mem_01312018 RNRComments.xlsx
HENA SCNHP EO Data Summary_mem RNR Comments.xlsx
Importance: High

Sure thing. Here are the 2 excel files used to populate the current conditions table. Look on the sheets labeled "population only"....hope this helps!

Mike

On Thu, Feb 15, 2018 at 1:53 PM, Endries, Mark <mark_endries@fws.gov> wrote:

> Looks great. Could I get it with the Population number or EOID so I can link it in the GIS?
>
> Mark
>
> **Mark Endries**
> USFWS
> 160 Zillicoa St
> Asheville, NC 28801
> Office: 828.258.3939 ext. 231
> Mobile: 828.215.1740
>
> On Thu, Feb 15, 2018 at 10:51 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > Found some nifty excel functions so this was a snap. Attached is the updated resilience table sorted by resilience category, then county, then site name. Also included is a county summary table with the total in each resilience category and total current populations per county. As a side note, each county in our range has at least one current population in the table.
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
> > phone: 828-258-3939 x238
> > cell: 828-782-0090
> >
> > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
> >
> > On Thu, Feb 15, 2018 at 9:06 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > I can work on the table update. I've got some time this morning and tomorrow morning.
> > >
> > > Rebekah Reid
> > >
> > > US Fish and Wildlife Service
> > > Asheville Ecological Services Field Office
> > > 160 Zillicoa St.
> > > Asheville, NC 28801

phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Feb 15, 2018 at 9:02 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Agreed....never mind on the map....although, once we get to the recommendation meeting, we might decide to produce a map printout that captures that...seems the decision makers like to see maps....but we'll cross that bridge once we get to it.
>
> Thanks!
>
> Mike
>
> On Thu, Feb 15, 2018 at 8:58 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > If we add county to that table and a summary at the bottom, that may do the same thing as the map...
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
> > phone: 828-258-3939 x238
> > cell: 828-782-0090
> >
> > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
> >
> > On Thu, Feb 15, 2018 at 8:51 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
> >
> > > Sorry for the confusion.....I've attached a Word document. Take a look at the Table on page 3. These are the populations we are using for Current Resilience, and it is the table I am hoping to capture with a map.....I can certainly be convinced that a map is not needed....perhaps the table by itself is sufficient. What do you guys think?
> > >
> > > Mike
> > >
> > > On Thu, Feb 15, 2018 at 8:23 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> > >
> > > > They are color coded by number of EOs. I think what Mike is thinking is breaking that down another level and indicating how many of the EOs in each county are very high, high, moderate, and low to show resiliency.
> > > >
> > > > Mike - am I catching that correctly?

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Feb 15, 2018 at 8:00 AM, Endries, Mark <mark_endries@fws.gov> wrote:

> I'm not following. Aren't the counties already color coded?
>
> Mark
>
> **Mark Endries**
> USFWS
> 160 Zillicoa St
> Asheville, NC 28801
> Office: 828.258.3939 ext. 231
> Mobile: 828.215.1740
>
> On Thu, Feb 15, 2018 at 7:55 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > I think this would be an efficient way to visually represent that data. We could also get creative with the table sorting to make it easier to read...
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
> > phone: 828-258-3939 x238
> > cell: 828-782-0090
> >
> > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
> >
> > On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:
> >
> > > Hey guys,
> > >
> > > I was thinking about figures and tables for the current conditions section....typically, I like to produce a figure with the locations of all of the populations across the range...color coded by resilience category....however, due to not showing locations of these populations, we're gonna have to be clever.

Mark, perhaps a figure similar to the one you produced showing # of EOs in each county....thinking the figure would show tallies within each county for very high, high, moderate, and low....just a visual representation of the data embedded in the current conditions table.

Thoughts?

Thanks,

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
1	**23.000^**	A	Mill Creek Forest and Seep	1,733	>1000	2016	2015		Polk	N	NHP Comp Review and Mont Report.
2	**29.000^**	A	Island Creek Heath Bluff	50,541	>1000	2016	2016		Burk	N	Extrapolated estimate. NHP Comp Review and Mont Report.
3	**31.000*^**	C?	NCDOT TIP: R-2824	1,062	>1000	2010	2001		Cata	N	No formal protection throughout all sites that comprise this occurrence. Small portions of sites NW, SW1 and SW2 are found as a roadside population in right-of-way. DOT monitors. 1,202 plants in 2011. Per 2015 draft report, there are now 1,062 plants.
4	**32.000***	D	NCDOT TIP R-2824	457	100-500	2013	2011		Cata	N	The northern subpopulation of the occurrence (76 plants) is situated within the existing DOT ROW of I-40. This portion of the occurrence is a roadside population that is not under formal protection from a binding agreement. Other plants in population are outside of the ROW. DOT monitors. Per draft 2015 report, there are 72 plants in the ROW. 457 plants counted in 2015 DOT survey.
5	**44.000*^**	AB	Little Gunpowder Creek Rare Plant Site 1	617	500-1000	2015	2011		Cald	Y	The DOT purchased a combined 2.68 acers as a perpetual CE for the species. The two easements are the Wallace and Church Conservation Easements. Has management plan been developed? 2011 survey included only an estimate of plants in CE (1,054)? Do we know the number of plants in the CE now? Last monitoring report indicates that 321 will be widened. Does CE prevent impacts to plants from widening? YES (TB 9/21/2017). Tim will send updated monitoring report with 2015 counts. 390 under protection? Presences noted in 2015. 617 plants counted at sites 38, 39, 43, and 44 in 2012.
6	**77.000***	CD	Little Gunpowder Creek Rare Plant Site 2	699	500-1000	2013	2007		Cald	Y	DOT monitors. Three subpops - B is entirely in ROW, A and C are partially in ROW. Per the Amended Biological Opinion, NCDOT agreed to protect 90 plants within Subpopulation C by acquiring additional right-of-way. No other plants were agreed to be protected. However, additional right-of-way was acquired on the west side of Deal Mill Road for a stream mitigation project. In so doing, additional plants were thereby protected. (After conducting monitoring in 2013, it was determined that 37 plants from Subpopulation B and 52 plants from Subpopulation A are also under protection. In addition, 201 plants in Subpopulation C now exist within the expanded right-of-way, and therefore are also under protection.) Plants in ROW as of 2013 total 617. Per 2015 Draft monitoring report, there are now 699 plants. ROW acquired for formal protection.
7	**87.000**	D	Catawba River: Lower Creek: Miller Creek	0	<100	2011	2011		Cald	N	55 plants dug by HARP on 04 November 2011 and relocated to EO 294 (Bud Geitner Park), few plants left, likely extirpated by Quarry expansion
8	**93.000**	D	West Shelby Mesic Slope		100-500	2005	2005				Parent EO
	93.034	*D*	*West Shelby Mesic Slope*	*60*		*2005*	*2005*		*Clev*	*N*	
	93.035	*D*	*First Broad River: Brushy Creek*	*< 100*		*2016*	*2001*		*Clev*	*N*	*8-10 clumps observed in 2016 but it was not a complete census. Less than 100 plants seen in 2001.*
9	**96.000**	A	Murrays Mill/Upper Balls Creek NA		>1000	2013	2010				Parent EO. Murray Mill Conservation Site, NCDOT Mitigation Site, Part of principal EO 096 having 37,800 plants prior to NCDOT impacts (IPB-2119 at sub EO 184) of which 356 plants are to be impacted and 6,000 are to be preserved on-site, as mitigation (HDR personnel 2005).
	*96.038^*	*CD*	*Catawba River: Deal Property*	*100 200*		*1996*	*1996*		*Cata*	*N*	
	*96.039^*	*D*	*Murrays Mill/Upper Balls Creek NA*	*< 50*		*2002*	*2002*		*Cata*	*?*	*Land in or near this area was purchased as mitigation by NC DOT, details unknown (Wichmann 2005)*
	96.184^*	*A*	*Murrays Mill/Upper Balls Creek NA*	*11,860*		*2013*	*2010*		*Cata*	*Y*	*NCDOT purchased 25.07 acres on May 1, 1996 and an additional 8.61 acres (Bowman Tract) on March 13, 2006 as a permanent conservation site for the species (Herman 2010). Has property been conveyed? NO (TB 9/21/2017) Management plan finalized? YES (TB 9/21/2017)*
10	**98.000**	CD	Cat Square Heartleaf Forest		100-500	2012	2001				Parent EO
	98.002	*X*	*South Fork Catawba River, Indian Creek*	*0*		*1957*	*1980*		*Linc*	*N*	*Extirpated*
	98.003	*D*	*Cat Square Heartleaf Forest*	*160*		*2001*	*1995*		*Linc*	*N*	*presence noted in 2001, 160 plants counted in 1995*
	98.004	*CD*	*Cat Square Heartleaf Forest*	*200*		*2001*	*2001*		*Linc*	*N*	
	98.060	*D*	*NCDOT TIP: B-2119*	*20 50*		*2012*	*2001*		*Linc*	*N*	*EO is associated with NC DOT project B-2119*
11	**99.000**	A	Big Horse Creek Rare Plant Site	106,940	>1000	2015	2015				Parent EO, plant toal for all sub Eos. Estimate population size represents all subEOs, including those not surveyed. (NHP Comp Review and Mont Report).
	*99.009^*	*AB*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*Presence noted in 2012 - no count made, 500 estimate plants in 2005*
	*99.010^*	*A*	*Kudzu Farm Rare Plant Site*	*n/a*		*2014*	*2013*		*Ruth*	*N*	*33,000 plants at the site, owner aware of conservation value. Not protected - BO for Quarry was amended. NHP Comp Review and Mont Report.*
	*99.037^*	*C*	*Broad River: Hunter Road*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*includes EO 37, 55, and 76. 32,000 total plants. NHP Comp Review and Mont Report.*
	*99.052^*	*C*	*Hensons Creek Natural Area*	*n/a*		*2005*	*2001*		*Ruth*	*N*	*200-300*
	*99.053^*	*D*	*Broad River: McKinney Bridge*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*<35*
	*99.055^*	*AB*	*Broad River: Richardson Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*included with EO 37. NHP Comp Review and Mont Report.*
	*99.061^*	*B*	*Broad River: UT at SR1115 and 1116*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*750-1000*
	*99.062^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2002*	*2002*		*Ruth*	*N*	*200-500. NHP Comp Review and Mont Report.*
	*99.063^*	*D*	*Broad River: Hayes Lake*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*20-25*
	*99.075^*	*A*	*Brice Rare Plant Site*	*n/a*		*2013*	*2013*		*Ruth*	*N*	*>7000. NHP Comp Review and Mont Report.*
	*99.076^*	*BC*	*Big Horse Rare Plant Site*	*n/a*		*2015*			*Ruth*	*Y*	*included with EO 37, Parris Heartleaf RHA voluntary agreement, 32,000 plants in 3 Eos. 200-250 in RHA. NHP Comp Review and Mont Report.*
	*99.079^*	*C*	*Broad River: Richardson Creek*	*n/a*		*2012*	*2001*		*Ruth*	*N*	*200-300. NHP Comp Review and Mont Report.*
	*99.090^*	*D*	*Broad River: Richardson Creek*	*n/a*		*2003*	*2003*		*Ruth*	*N*	*100-200*
	*99.121^*	*B*	*Broad River: Dills Creek*	*n/a*		*2004*	*2004*		*Ruth*	*N*	*300*
	*99.172^*	*D*	*Big Horse Rare Plant Site*	*n/a*		*2012*	*2012*		*Ruth*	*Y*	*50-100, Parris Heartleaf RHA voluntary agreement.*
	*99.181^*	*AB*	*Broad River: Dills Creek*	*n/a*		*2012*	*2001*		*Ruth*	*?*	*This suboccurrence is included in the determination of total extrapolated acreage for USFWS Flex Fund Monitoring Site 2, although it was not surveyed. NHP Comp Review and Mont Report.*
	*99.182^*	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.249	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*3,000-5,000 individuals counted within Eos 182, 249, 250, and 251.*
	99.250	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.251	*A?*	*Hensons Creek Natural Area*	*n/a*		*2001*	*2001*		*Ruth*	*N*	*included with EO 249*
	99.267	*CD*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*150-250*
	99.268	*D*	*Kudzu Farm*	*n/a*		*2006*	*2008*		*Ruth*	*N*	*25-30*
	99.319	*E*	*Broad River: Big Horse Creek*	*unk*		*2012*	*2012*		*Ruth*		*observed but no count made.*
12	**100.000**	A	Broad River/Sandy Run NA		>1000	2012	2012				Parent EO. NCDOT Mitigation Site, NCDMS, Broad River Greenway. DOT purchased 1000 AC in 2003 and transferred to Broad River Greenway, Inc. in 2008. 32,702 plants within the Broad River Greenway CE per 2015 draft report.
	*100.014^*	*C?*	*Broad River/Sandy Run NA*	*177*		*2009*	*2001*		*Clev*	*N*	*EO is associated with NC DOT project B-2119, outside Broad River Tract. Presence noted in 2001 and 2009 - no count made, 177 plants counted in 2000*
	*100.049^*	*A*	*Broad River/Sandy Run NA*	*1,118*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 792 plants reported in 2012, 2015 draft report documents 1118.*
	*100.050^*	*A*	*Broad River/Sandy Run NA*	*4,801*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 4712 plants reported in 2012, 2015 draft report documents 4801.*
	*100.051^*	*A*	*Broad River/Sandy Run NA*	*2,363*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 2326 plants reported in 2012, 2015 draft report documents 3241.*
	*100.073^*	*A*	*Broad River/Sandy Run NA*	*13,595*		*2012*	*2012*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 11446 plants reported in 2012, 2015 draft report documents 13959.*
	*100.074^*	*B*	*Broad River/Sandy Run NA*	*722*		*2012*	*2008*		*Clev*	*Y*	*In part in the Broad River Tract, DMS, NCDOT Mitigation Site. 675 plants reported in 2012, 2015 draft report documents 722.*
	*100.149^*	*A*	*Broad River/Sandy Run NA*	*3,280*		*2012*	*2009*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2722 plants reported in 2012, 2015 draft report documents 3280 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.233^*	*A*	*Broad River/Sandy Run NA*	*3,383*		*2012*	*2012*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 2352 plants reported in 2012, 2015 draft report documents 3383. Has site been conveyed to Cleveland County yet? (Ask DOT)*
	100.235	*CD*	*Broad River: Trib N of Broad River and SE of Lake Houser*	*100 200*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.236^*	*C*	*Broad River/Sandy Run NA*	*150 300*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*
	*100.237^*	*E*	*Broad River/Sandy Run NA*	*> 200*		*2012*	*2001*		*Clev*	*N*	*Outside Broad River Tract*
	*100.238^*	*A*	*Broad River/Sandy Run NA*	*1,865*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 1865 plants reported in 2012, 2015 draft report documents 1898 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.239^*	*D*	*Broad River/Sandy Run NA*	*165*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 94 plants reported in 2012, 2015 draft report documents 165 Has site been conveyed to Cleveland County yet? (Ask DOT)*
	*100.240^*	*F*	*Broad River/Sandy Run NA*	*20*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 21 plants reported in 2012, 2015 draft report documents 20 Has site been conveyed to Cleveland County yet? (Ask DOT). Should not be failed to find - F*

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes	
	*100.241^*	*D*	*Broad River/Sandy Run NA*	*115*		*2012*	*2008*		*Clev*	*Y*	*Occurrence is within the NCDOT mitigation site - The Broad River Tract. 150 plants reported in 2012, 2015 draft report documents 115. Has site been conveyed to Cleveland County yet? (Ask DOT)*	
	*100.246^*	*D*	*Broad River/Sandy Run NA*	*< 100*		*2001*	*2005*		*Clev*	*N*	*Outside Broad River Tract*	
13	**125.000^**	A	New Hope Springhead Swamp		>1000	2016	2015		Polk	Y	NHP Comp Review and Mont Report. A portion of this site now has formal protection as a Barefield RHA voluntary agreement.	
14	**154.000^**	C	Facebook Site	2,576	>1000	2016	2015		Ruth	Y	Deed restriction (ask Corps) - Wayne Hawkins. 9/8 - Talked with David Brown at Corps. DR was recorded, site is posted with signs. NHP Comp Review and Mont Report.	
15	**157.000*^**	AB	First Broad River: Crooked Run Creek	330	100-500	2010	2005		Clev	N	DOT no longer monitors, too far from ROW.	
16	**158.000*^**	D	NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	123	100-500	2016	2016		Cata	N	No signed right-of-way, conservation easement, or fee title acquisition. Approximately 15 plants (3%) are within the estimated right-of-way of SR 1115 (Camp Creek Road). Plants found within the right-of-way are not protected under any formal agreement. Future road improvement and/or maintenance may affect portions of the dwarf-flowered heartleaf (DFHL) population adjacent to the existing road. NHP Comp Review and Mont Report.	
17	**176.000**	A	Davenport Road/Mountain View Rare Plant Site	6,750	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	*176.167^*	*A*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2005*	*2015*		*Ruth*	*N*	*Included with EO 107. NHP Comp Review and Mont Report.*	
	*176.168^*	*A*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*1113. NHP Comp Review and Mont Report.*	
	*176.169^*	*D*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2016*	*2016*		*Ruth*	*N*	*35. NHP Comp Review and Mont Report.*	
	*176.170^*	*C*	*Davenport Road/Mountain View Rare Plant Site*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*191. NHP Comp Review and Mont Report.*	
18	**177.000**	A	Broad River: Floyds Creek	12,687	>1000	2016	2016				Parent EO. Extrapolated estimate for subEOs. NHP Comp Review and Mont Report.	
	*177.016^*	*E*	*Broad River: Floyds Creek*	*n/a*		*2014*	*2012*		*Ruth*	*N*	*5340, any in DOT ROW. Impacted plants moved to Tate, remaining plants have no formal protection (TB 9/21/2017).*	
	*177.107^*	*B*	*Broad River: Floyds Creek*	*n/a*		*2008*	*2015*		*Ruth*	*N*	*241, Individuals of Hexastylis naniflora expected to be impacted by widening of US 221 will be moved to the Tate, remiaining plants have no formal protection. (TB 9/21/2017)*	
	*177.122^*	*B?*	*Broad River: Floyds Creek*	*n/a*		*2008*	*2007*		*Ruth*	*N*	*123, any plants impacted by the US221 widening would be moved to Tate, remaining plants have no formal protection (TB 9/21/2017).*	
	*177.163^*	*B*	*Broad River: Floyds Creek*	*n/a*		*2016*	*2015*		*Ruth*	*N*	*included with EO 107*	
	*177.164^*	*A*	*Broad River: Floyds Creek*	*n/a*		*2016*	*2005*		*Ruth*	*N*	*537, May incure impacts from widening of US 221, NCDOT TIP Nos. R-2233A&B, any impacts, any protect via DOT? Impacted plants will be moved to Tate, remaining plants have no formal protection (TB 9/21/2017)*	
	*177.165^*	*C*	*Broad River: Floyds Creek*	*n/a*		*2005*	*2005*		*Ruth*	*N*	*included with EO 107*	
	*177.166^*	*CD*	*Broad River: Floyds Creek*	*n/a*		*2005*			*Ruth*	*N*	*included with EO 107*	
19	**178.000**	A	Catawba River: Hoyle Crk-Micol Crk		>1000	2013	2016				Parent EO.	
	178.159^*	*A*	*Catawba River: Hoyle Crk-Micol Crk*	*2182*		*2013*	*2005*		*Burk*	*N*	*Unprotected roadside population. A portion of this occurrence is found within North Carolina Department of Transportation (NCDOT) right-of-way. No formal protection. Presence noted in 2013, 2182 plants counted in 2011.*	
	*178.160^*	*A*	*Catawba River: Hoyle Crk-Micol Crk*	*733*		*2013*	*2008*		*Burk*	*N*	*loss of 118 of 851 plants due to DOT construction, any protection? No count since 2008. DOT will update, no plants taken, no protection (TB 9/21/2017)*	
	*178.161^*	*A*	*Catawba River: Hoyle Crk-Micol Crk*	*2,754*		*2009*			*Burk*	*N*	*In Dot study area. No formal protection. Presence noted in 2009, plants counted in 2008.*	
	*178.254^*	*D?*	*Catawba River: Hoyle Crk-Micol Crk*	*> 168*		*2010*	*2010*		*Burk*	*Y*	*Permanent conservation easement with Burke Cty and Public School System. New count from 2010 monitoring report (YR4).*	
	*178.255^*	*D*	*Catawba River: Hoyle Crk-Micol Crk*	*unk*		*2006*	*2006*		*Burk*	*Y*	*286 plants moved to a 6.1 ac on-site protected area (guessing EO 254 and 256). Remaining plants in construction area.*	
	*178.256^*	*C?*	*Catawba River: Hoyle Crk-Micol Crk*	*> 376*		*2010*	*2010*		*Burk*	*Y*	*Permanent conservation easement with Burke Cty and Public School System. Considerable number of other plants that were not counted or monitored (2006). New count from 2010 monitoritng report (YR4).*	
	*178.280^*	*C*	*Catawba River: Hoyle Crk*	*126*		*2009*	*2009*		*Burk*	*Y*	*Protection of NCDOT ROW in progress (2009). Expanded ROW to formally preserve plants left after construction, natives and transplants, we will get new data (TB 9/21/2017)*	
	*178.281^*	*E*	*Catawba River: Hoyle Crk-Micol Crk*	*unk*		*2009*	*2009*		*Burk*	*N*	*presence noted, no count made - outside of NCDOT ROW*	
	*178.282^*	*E*	*Catawba River: Hoyle Crk-Micol Crk*	*unk*		*2009*	*2009*		*Burk*	*N*	*included with 281? - presence noted, no count made - outside of NCDOT ROW*	
	178.283	*E*	*Catawba River: McGalliard Creek*	*unk*		*2009*	*2009*		*Burk*	*N*	*included with 281? - presence noted, no count made - outside of NCDOT ROW*	
	178.284	*E*	*Catawba River: McGalliard Creek*	*unk*		*2009*	*2009*		*Burk*	*N*	*included with 281? - presence noted, no count made - outside of NCDOT ROW*	
	178.310	*A*	*Megalliard Creek Slopes; Lake Rhodhiss*	*1,500 2,000*		*2016*	*2016*		*Burk*	*Y*	*Tract is part of an application to CWMTF from the Town of Valdese to protect as a park (2016). The property will be a combination of conservation land, greenway, and town park. We have had discussions with them about designing the park and activities in a way that least impacts the stream buffers and natural heritage values (specifically DFHL). I'm in the process of drafting contracts and expect the Town to purchase the property and record a conservation easement on stream buffers and natural heritage areas before end of January 2018 (end of purchase contract with current owner) Nancy Guthrie 9/25/2017. Verify in January 2018.*	*NHP*
20	**179.000**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos		>1000	2012	2005				Parent EO	
***	*179.030**	*CD*	*NCDOT TIP R-2824*	*3,291*		*2013*	*2001*		*Cata*	*N*	*DOT monitors. A small portion (71 plants) is situated with the existing DOT ROW. Not under formal protection from a binding agreement. Per draft 2015 report, there are 37 plants in the ROW and 3,291 plants totol in the EO. Last report (2013)documented 4,719 plants.*	
	*179.162**	*D*	*NCDOT TIP R-2825*	*21*		*2012*	*2005*		*Cata*	*N*	*No signed right-of-way, conservation easement, or fee title acquisition. No plants are currently within estimated right-of-way. Future road improvement plans may affect the DFHL plants along the ditch adjacent to the existing road.*	
21	**206.000**	D	Buffalo Creek: Ravine	90	<100	2007	2007		Clev	N	in DOT study area. Near Shelby Bypass but not expected to be impacted. No formal protection.	
22	**208.000^**	A	Buffalo Creek: Potts Creek	50 100	<100	2012	2007		Clev	?	Pending NCDOT purchase for ROW protection (2009). NC DOT proposes to protect Sites 33, 44, and 35 [EO 208, in part] throught a conservation easement. Ask DOT	
23	**214.000**	A	Buffalo Creek: Tributaries N and S of SR 2047		>1000	2012	2000				Parent EO	
	*214.201^*	*D*	*Buffalo Creek: Tributary S*	*64*		*2000*	*2000*		*Clev*	*?*	*14 of 78 plants will be impacted by the Shelby bypass. DOT protection via CE? Ask DOT*	
	*214.202^*	*A*	*Buffalo Creek: Ravine N*	*1,627*		*2000*	*2000*		*Clev*	*?*	*14 of 1641 plants will be impacted by the Shelby bypass. Pending DOT purchase for ROW protection? Ask DOT.*	
	*214.203^*	*B*	*Buffalo Creek: 3rd Tributary S*	*96*		*2007*	*2007*		*Clev*	*?*	*110 of the site's 206 plants were impacted by Shelby bypass. Pending DOT purchase for ROW protection?*	
	*214.204^*	*A?*	*Buffalo Creek: S of SR 2128*	*?*		*2000*	*2000*		*Clev*	*?*	*3,094 plants in site, entire site impacted by Shelby bypass. No estimate of plants remaining. Some protection through CE? Ask DOT*	
	*214.205^*	*D*	*Buffalo Creek: N of SR 2128*	*171*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT. 183 plants of which 13 were impacted.*	
	*214.209^*	*BC*	*Buffalo Creek: Tributary E of County Fairgrounds*	*196*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009). 332 plant of which 136 plants in construction limits. Ask DOT.*	
	*214.212^*	*D*	*Buffalo Creek: Slope along Trib just N of SR 2047*	*97*		*2000*	*2000*		*Clev*	*N*	*In DOT study area for R-2707. No formal protection.*	
	*214.213^*	*CD*	*Buffalo Creek: Ravine just S of SR 2047*	*50 100*		*2012*	*2012*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT*	
24	**216.000**	A	Buffalo Creek: Kings Mountain Res		>1000	2016	2000				Parent EO	
	216.028	*B*	*Buffalo Creek Rare Plant Site*	*250*		*2016*	*2016*		*Clev*	*Y*	*This site has been preserved apart from the landfill and the habitat is intact, the area has been designated as Special Protected Environmental Area by Cleveland County. Spoke with Nathan McNeilly, he will check on protections (09/2017). The area is buffer around the landfill and he has been told to stay out of the area. Area is fenced off. (09/27/17)*	
	216.196	*D*	*Buffalo Creek: Friendship Chapel*	*56*		*2006*	*2006*		*Clev*	*N*	*In Dot study area. No formal protection.*	
	*216.197^*	*A*	*Buffalo Creek: Kings Mountain Res*	*2,067*		*2000*	*2000*		*Clev*	*?*	*NC DOT plans NCDOT proposes to protect Site 13 [EO 197] trough a conservation easement*	
	*216.198^*	*B*	*Buffalo Creek: Kings Mountain Res*	*450*		*2007*	*2007*		*Clev*	*N*	*In Dot study area. No formal protection.*	
	*216.199^*	*B*	*Buffalo Creek: Kings Mountain Res*	*432*		*2007*	*2007*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT. Construction activity will eliminate some.*	
	*216.200^*	*D*	*Buffalo Creek: Kings Mountain Res*	*55*		*2000*	*2000*		*Clev*	*?*	*Pending NCDOT purchase for ROW protection (2009) Ask DOT*	
25	**217.000**	B	Broad River: Brushy Creek		>1000	2016	2016				Parent EO	
	217.190	*F*	*Broad River: Brushy Creek*	*0*		*2000*	*2006*		*Clev*	*N*	*No plants found.*	
	*217.191**	*D*	*Broad River: Brushy Creek*	*264*		*2014*	*2000*		*Clev*	*Y*	*DOT purchased 19 acres of ROW for Shelby By-Pass in Oct. 2013. Of the 19 AC, about 6.4 AC are to preserve HENA in perpetuity at Site 7. 283 plants at Site 7, likely more in EO. Per 2015 draft report, 264 plants at the site.*	
	217.192	*C*	*Broad River: Brushy Creek*	*494*		*2016*	*2016*		*Clev*	*Y*	*NCDOT proposes to protect Site 8 [EO 192] through a conservation easement. Site 8, 8A, and 8B of EO 192 are entirely contained in NCDOT ROW. Site contained 311 plants. Per 2015 draft report, site now contains 494 plants. Protected formally in ROW (TB 9/21/2017).*	
	217.193	*C*	*Broad River: Brushy Creek*	*271*		*2000*	*2000*		*Clev*	*?*	*NC DOT proposes to protect Site 9 through a conservation easement.*	
	217.305	*CD*	*Washburn Switch Business Park*	*70*		*2015*	*2015*		*Clev*	*N*	*Three locations (126 plants) were rescued and moved to southeast corner of property. Relocated plants not included in plant total.*	
26	**227.000^**	A	Peaked Top Rare Plant Site/Foothills Landfill	16,463	>1000	2014	2014		Cald	Y	CE (260 AC) with the Foothills Conservancy of NC. Any data since 2014,who is contact?	

Populations	EO Number	EO Rank	Site Name	Number of Plants	Total estimated plants	Last Observed	Rank Date	Resilience Category	County	Protection	Notes
27	**232.000**	A?	Buffalo Creek Rare Plant Site		500-1000	2012	2005				Parent EO.
	232.046	*A*	*Buffalo Creek Rare Plant Site*	*500*		*2005*	*2005*		*Clev*	*N*	*Associated with B-2816, R-2824. This property is eligible as a Historic District on the National Register with much of the historic features still intact and is protected as a 4-F Property. Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
	232.231	*D*	*Buffalo Creek Rare Plant Site*	*20*		*2012*	*2012*		*Clev*	*N*	*Associated with B-2618. Are plants in ROW? Ask DOT, DOT doesn't know about site (TB 9/21/2017).*
28	**243.000**	AB	Jacob Fork West Corridor		>1000	2012	2007				Parent EO
	*243.012^*	*A*	*Jacob Fork West Corridor*	*> 1,000*		*1995*	*1995*		*Cata*	*?*	*Catawba County Wildlife Club RHA voluntary agreement.*
	*243.242^*	*D*	*Jacob Fork West Corridor*	*4*		*2005*	*2005*		*Cata*	*N*	
	*243.269^*	*B*	*Jacob Fork West Corridor*	*> 200*		*2007*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017).*
	*243.270^*	*C?*	*Jacob Fork West Corridor*	*75 100*		*2012*	*2008*		*Cata*	*Y*	*TNC has easements but does not do monitoring of HENA, NHP should be most up to date data (Wichmann 09/25/2017). Counts from 2006-7, occupied area remapped in 2012.*
29	**245.000**	AB	Floyds Creek Tributray Rare Plant Site		>1000	2010	2005				Parent EO
	245.091	*D*	*Broad River: Floyds Creek*	*30*		*2012*	*2003*		*Ruth*	*N*	
	245.113	*C*	*Floyds Creek Tributray Rare Plant Site*	*1,113*		*2010*	*2007*		*Ruth*	*N*	*7 plants moved from the area to be impacted by the road project to the transplant area at the Tate, 62 moved to Tate?*
	245.175	*C*	*Floyds Creek Tributray Rare Plant Site*	*unk*		*2010*	*2007*		*Ruth*	*N*	*included with EO 113, NCDOT TIP: R-2233, 114 plants moved from the area to be impacted by the road project to the transplant area at the Tate. Impact by US221 widening. Any plants left? Ask DOT. No formal protection.*
30	**247.000**	A	New Bethel Rare Plant Site		>1000	2015	2015				Parent EO, NC DOT Mitigation Site
	247.013	*D*	*Sandy Mush Outcrop*	*< 100*		*2005*	*2005*		*Ruth*	*N*	
	247.056	*D*	*Broad River: Floyds Creek*	*< 150*		*2002*	*2001*		*Ruth*	*N*	
	*247.080^*	*D*	*Broad River: Floyds Creek*	*50*		*2012*	*2003*		*Ruth*	*N*	*No plant count made in 2012. 50 plants counted in 2003.*
***	*247.106*^*	*A*	*New Bethel Rare Plant Site*	*4,547*		*2015*	*2008*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Resident plants. Tate has a management plan (TB 9/21/2017).*
	*247.114^*	*D*	*Broad River Floyds Creek*	*0*		*2010*	*2003*		*Ruth*	*N*	*14 plants moved from the area to be impacted by the road project to the transplant area at the Tate. NO formal protection for 114, 115, 173, and 174 (all impacted plants moved to Tate). TB 9/21/2017*
	*247.115^*	*C*	*Broad River Floyds Creek*	*133*		*2005*	*2007*		*Ruth*	*N*	*Combine with EO 114*
	*247.173^*	*D*	*Broad River Floyds Creek*	*102*		*2005*	*2003*		*Ruth*	*N*	*inds of HENA expected to be impacted by widening of US 221 will be moved to the Tate Conservation Easement site. How many? 102 clumps some moved??*
	*247.174^*	*D*	*Broad River Floyds Creek*	*84*		*2010*	*2003*		*Ruth*	*N*	*35 of 119 plants moved from the area to be impacted by the road project to the transplant area at the Tate, in DOT study area*
***	*247.286*^*	*B*	*New Bethel Rare Plant Site*	*326*		*2015*	*2015*		*Ruth*	*Y*	*Tate Conservation Easement (DOT Mitigation Site). Transplanted plants.*
31	**248.000**	C	Jonas Road Rare Plant Site		100-500	2005	2005				Parent EO
	248.040	*C*	*Jonas Road Rare Plant Site*	*150 200*		*2005*	*2005*		*Ruth*	*N*	
	248.054	*D*	*Broad River: McKinney Creek*	*20 30*		*2014*	*2001*		*Ruth*	*N*	*20-30 plants noted for last count in 2005*
32	**252.000**	B	South Fork Catawba River, Henry Fork		100-500	2007	2005				Parent EO
	252.019	*D?*	*NCDOT TIP: R-0085*	*unk*		*2007*	*2007*		*Cata*	*?*	*EO seems to have been extirpated by construction of the 321 Bypass, NCDOT is trying to purchase the property (NCDOT 2009), Some plants protected in conservation easments outside of construction zones. DOT will send updated info.*
	252.020	*B*	*NCDOT TIP: R-0086*	*296*		*2007*	*2005*		*Cata*	*?*	*May have been used as a mitigation site for US-321 Bypass, protected ask DOT. DOT will send updated info.*
33	**271.000**	C?	Pott Creek	5 6	<100	2012	2012		Cata	Y	The Nature Conservancy - likely part of a larger pop containing 700-1,000 plants (2008)
34	**272.000**	BC	No Business Creek, Boyd Tract	75 150	100-500	2007	2007		Clev	N	
35	**274.000**	A?	Broad River/Sandy Run NA	100	100-500	2012	2008		Clev	Y	Broad River Greenway, Town of Boiling Springs
36	**275.000***	C	Buffalo Shoals Creek	257	100-500	2014	2014		Ired	N	Small portion of this population (apprx. 20 plants) is within the DOT ROW, the remainder is on private property. Entire pop. Is monitored. No formal protection.
37	**276.000^**	A	Cliffside Steam Station	39,535	>1000	2016	2016		Clev/Ruth	Y	Voluntary agreement with Duke Energy. NHP Comp Review and Mont Report.
38	**277.000**	D	Hickory: Martin Marietta Quarry	0	extripated	2011	2011		Cata	N	Site developed. Plants moved to EO 294 (Geitner Park).
39	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	?	<100	2009	2009		Linc	N	small
40	**287.000**	AB	Fox Knoll Farm	?	???	2016	2016		Polk	Y	PAC contact Pam Torlina has provided zip file with updates (need to review).
41	**291.000**	C	Gunpowder Creek	82	???	2012	2010		Cald	N	Associated with NCDOT TIP R-3437, any plants in ROW? No formal protection.
42	**292.000**	D	Forest City: Adj to Isothermal CC	150	100-500	2010	2010		Ruth	N	Owner, Ruthford County.
43	**293.000**	E	Killian Crossroads	unk	???	2010	2010		Cata	N	No plant count in EO data.
44	**295.000**	B	Hickory Area		100-500	2016				Y	Owner, Hickory Parks and Rec (protected? Ask NHP)
	295.021	*A*	*Hickory Area, Catawba River: Geitner Park*	*> 300*		*2005*	*2005*		*Burk*	*?*	*Catawba County Open Space, Owner, Hickory Parks and Rec. Ask NHP?*
	295.294	*C*	*Hickory Area: Bud Geitner Park Transplant Site*	*153*		*2016*	*2014*		*Burk*	*?*	*Catawba County Open Space (protected? Ask NHP) - Hickory County Parks and Rec. Includes plants from EOs 227 and 087.*
	295.313	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cata*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB.*
	295.314	*E*	*NCDOT TIP U-4700*	*unk*		*2012*	*2012*		*Cald*	*N*	*Associated with NCDOT TIP U-4700 (protected? Ask DOT) - EO data indicates report pending? - No plant count in EO data. No formal protection per TB (9/21/2017).*
45	**296.000**	CD	UT of Kings Mountain Res	100	100-500	2012	2012		Gast	N	
46	**297.000**	CD	Beaverdam Crk at First Broad River	unk	???	2011	2011		Clev	N	No plant count in EO data.
47	**298.000**	C	Brushy Creek Headwaters	250 300	100-500	2014	2014		Clev	N	
48	**299.000**	D	Lincoln County, SR-1314	27	<100	2014	2014		Linc	N	In DOT study. No formal protection.
49	**300.000**	D	Levan Family Farm	50	<100	2013	2013		Ired	N	
50	**302.000**	A	Rhyne Conservation Preserve		>1000	2016	2014				Parent EO. Catawba Lands Conservancy Easement and NCCMTF Easement.
	302.047	*D*	*NCDOT Project R-617C, South Fork Catawba*	*5*		*2005*	*2005*		*Linc*	*N*	*In DOT ROW, no formal protection.*
	302.262	*A*	*Rhyne Conservation Preserve*	*19,873*		*2016*	*2016*		*Linc*	*Y*	*Catawba Lands Conservancy Easement, NCCWMTF, and Catawba Lands Conservancy Preserve. NHP Comp Review and Mont Report.*
51	**303.000**	AB	Smith Cliff/Henry Fork River	?	100-500	2015	2015		Burk	Y	Hundreds of plants observed. Possible hybrid population. Conservation site managed by the Foothills Conservancy of NC. Is it an RHA, ask NHP?.
52	**304.000**	B?	Simms Hill/Little River Uplands	200 250	100-500	2015	2015		Burk	Y	Conservation site managed by the Foothills Conservancy of NC
53	**306.000**	D	Fanjoy Road Site	75	<100	2015	2015		Ired	N	
54	**308.000**	C	Glade Creek, Alex County	2,194	>1000	2017	2017		Alex	Y	2456 ind at 7 locations. Some plants in DOT ROW. BO with Andrew. 262 plants impacted and 24 HENA plants going back in to the ROW, 12 plants will have formal protection (TB 9/21/2017).
55	**309.000**	D?	South Mountains Pleasant Grove Uplands	?	<100	2016	2016		Burk	N	few
56	**311.000**	A	Collinsville (Hughes) Creek Slopes	200 750	100-500	2016	2016		Polk	Y	several hundred to 750 - Pacolet Area Conservancy Easement. PAC contact Pam Torlina has provided zip file with updates (need to review).
57	**312.000**	A	Richardson Creek trib above Toms Lake	?	>1000	2016	2016		Ruth	Y	several thousand clumps? - managed by Pacolet Area Conservancy Preserve. PAC contact Pam Torlina has provided zip file with updates (need to review).
58	**316.000**	C	Northern Catawba County		???	2017	2017			?	Parent EO; Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory
59	316.273	C	Northern Catawba County - Catawba River UT to Falling Creek	499	500-1000	2006	2006		Cata	Y	Deed restriction (ask Corps) - Raymond von Drehle 1-ac pond project 2007. 9/11 - Found BO, Log # 4-2-06-396. Total of 530 plants per BO. Impacts reduced to 31 plant per as-built in file.
	316.315	*D*	*NC-127/Cloninger Mill Road*	*60*		*2017*	*2017*		*Cata*	*?*	*Catawba County Open Space (protected? Ask NHP) - Owner, City of Hickory - In study area for NCDOT TIP R-3603A*
60	**317.000**	D	NCDOT TIP R-3603A	30	<100	2017	2017		Alex	N	EO is in study area for NCDOT TIP R-3603A. No formal protection.
61	**318.000**	C	Burke County - Drowning Creek UT	356	100-500	2017	2017		Burk	N	230 plants within DOT ROW fence for TIP B-4447. No formal protection.
62	**320.000**	E	Hickory Creek - UT (Shelby High School)	15	<100	2016	2016		Clev		
63	**321.000**	B	Gunpowder Creek: South of Hudson	2475	>1000	2012	2012		Cald		NCDOT
	Add		*Rock Barn Solar Farm*	*821*					*Cata*	*Y*	*Originally 1,021 plants, 200 impacted by project. 9/8 - David Brown told me about site. 9/11 - Bryan T. looking to see if DR recorded. 9/21 - DR was recorded.*	*NHP*

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
1	**23.000**	**23.000**	A	Mill Creek Forest and Seep	>1000	very high	Polk	2016	
2	**29.000**	**29.000**	A	Island Creek Heath Bluff	>1000	very high	Burk	2016	
3	**31.000**	**31.000**	C?	NCDOT TIP: R-2824	>1000	very high	Cata	2015	
4	**32.000**	**32.000**	D	NCDOT TIP R-2824	100-500	moderate	Cata	2015	
5	**44.000**	**44.000**	AB	Little Gunpowder Creek Rare Plant Site 1	500-1000	high	Cald	2015	
6	**77.000**	**77.000**	CD	Little Gunpowder Creek Rare Plant Site 2	500-1000	high	Cald	2015	
7	**87.000**	**87.000**	D	Catawba River: Lower Creek: Miller Creek	<100	low	Cald	2011	likely extirpated, do we want to include this one?
8	**93.000**	**34; 35**	D	West Shelby Mesic Slope	100-500	moderate	Clev	2016	
9	**96.000**	**38; 39; 184**	A	Murrays Mill/Upper Balls Creek NA	>1000	very high	Cata	2013	
10	**98.000**	**2; 3; 4; 60**	CD	Cat Square Heartleaf Forest	100-500	moderate	Linc	2012	
11	**99.000**	**9; 10; 37; 52; 53; 55; 61; 62; 63; 75; 76; 79; 90; 121; 172; 181; 182; 249; 250; 251; 267; 268; 319**	A	Big Horse Creek Rare Plant Site	>1000	very high	Ruth	2015	
12	**100.000**	**14; 49; 50; 51; 73; 74; 149; 233; 235; 236; 237; 238; 239; 240; 241; 246**	A	Broad River/Sandy Run NA	>1000	very high	Clev	2012	
13	**125.000**	**125.000**	A	New Hope Springhead Swamp	>1000	very high	Polk	2016	
14	**154.000**	**157; 158**	C	Facebook Site	>1000	very high	Ruth	2016	
15	**176.000**	**167; 168; 169; 170**	A	Davenport Road/Mountain View Rare Plant Site	>1000	very high	Ruth	2016	
16	**177.000**	**16; 107; 122; 163; 164; 165; 166**	A	Broad River: Floyds Creek	>1000	very high	Ruth	2016	
17	**178.000**	**159; 160; 161; 254; 255; 256; 280; 281; 282; 283; 284; 310**	A	Catawba River: Hoyle Crk-Micol Crk	>1000	very high	Burk	2013	
18	**179.000**	**30; 162**	CD	South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	>1000	very high	Cata	2013	
19	**206.000**	**206.000**	D	Buffalo Creek: Ravine	<100	low	Clev	2007	
20	**208.000^**	**208.000**	A	Buffalo Creek: Potts Creek	<100	low	Clev	2012	
21	**214.000**	**201; 202; 203; 204; 205; 209; 212; 213**	A	Buffalo Creek: Tributaries N and S of SR 2047	>1000	very high	Clev	2012	
22	**216.000**	**28; 196; 197; 198; 199; 200**	A	Buffalo Creek: Kings Mountain Res	>1000	very high	Clev	2016	
23	**217.000**	**190; 191; 192; 193; 305**	B	Broad River: Brushy Creek	>1000	very high	Clev	2016	
24	**227.000**	**227.000**	A	Peaked Top Rare Plant Site/Foothills Landfill	>1000	very high	Cald	2014	
25	**232.000**	**46; 231**	A?	Buffalo Creek Rare Plant Site	500-1000	high	Clev	2012	
26	**243.000**	**12; 242; 269; 270**	AB	Jacob Fork West Corridor	>1000	very high	Cata	2012	
27	**245.000**	**91; 113; 175**	AB	Floyds Creek Tributray Rare Plant Site	>1000	very high	Ruth	2012	
28	**247.000**	**13; 56; 80; 106; 114; 115; 173; 174; 286**	A	New Bethel Rare Plant Site	>1000	very high	Ruth	2015	
29	**248.000**	**40; 54**	C	Jonas Road Rare Plant Site	100-500	moderate	Ruth	2014	

Populations	Pop Number	EO Numbers	EO Rank	Site Name	Total estimated plants	Resilience Category	County	Last Observed	RNR Notes
30	**252.000**	**19; 20**	B	South Fork Catawba River, Henry Fork	100-500	moderate	Cata	2007	
31	**271.000**	**271.000**	C?	Pott Creek	<100	low	Cata	2012	
32	**272.000**	**272.000**	BC	No Business Creek, Boyd Tract	100-500	moderate	Clev	2007	
33	**274.000**	**274.000**	A?	Broad River/Sandy Run NA	100-500	moderate	Clev	2012	
34	**275.000**	**275.000**	C	Buffalo Shoals Creek	100-500	moderate	Ired	2014	
35	**276.000**	**276.000**	A	Cliffside Steam Station	>1000	very high	Clev/Ruth	2016	
36	**279.000**	**279.000**	D?	Northeast Lincolnton: UT Walker Branch	<100	low	Linc	2009	
37	**287.000**	**287.000**	AB	Fox Knoll Farm	100-500	moderate	Polk	2016	found newer data - "several hundred clumps"
38	**291.000**	**291.000**	C	Gunpowder Creek	<100	low	Cald	2012	
39	**292.000**	**292.000**	D	Forest City: Adj to Isothermal CC	100-500	moderate	Ruth	2010	
40	**293.000**	**293.000**	E	Killian Crossroads	<100	low	Cata	2010	
41	**295.000**	**21; 294; 313; 314**	B	Hickory Area	100-500	moderate	Burk/Cata/Cald	2016	
42	**296.000**	**296.000**	CD	UT of Kings Mountain Res	100-500	moderate	Gast	2012	
43	**297.000**	**297.000**	CD	Beaverdam Crk at First Broad River	<100	low	Clev	2011	
44	**298.000**	**298.000**	C	Brushy Creek Headwaters	100-500	moderate	Clev	2014	
45	**299.000**	**299.000**	D	Lincoln County, SR-1314	<100	low	Linc	2014	
46	**300.000**	**300.000**	D	Levan Family Farm	<100	low	Ired	2013	
47	**302.000**	**47; 262**	A	Rhyne Conservation Preserve	>1000	very high	Linc	2016	
48	**303.000**	**303.000**	AB	Smith Cliff/Henry Fork River	100-500	moderate	Burk	2015	
49	**304.000**	**304.000**	B?	Simms Hill/Little River Uplands	100-500	moderate	Burk	2015	
50	**306.000**	**306.000**	D	Fanjoy Road Site	<100	low	Ired	2015	
51	**308.000**	**308.000**	C	Glade Creek, Alex County	>1000	very high	Alex	2017	
52	**309.000**	**309.000**	D?	South Mountains Pleasant Grove Uplands	<100	low	Burk	2016	
53	**311.000**	**311.000**	A	Collinsville (Hughes) Creek Slopes	100-500	moderate	Polk	2016	
54	**312.000**	**312.000**	A	Richardson Creek trib above Toms Lake	>1000	very high	Ruth	2016	
55	**316.000**	**273; 315**	C	Northern Catawba County	500-1000	high	Cata	2017	
56	**317.000**	**317.000**	D	NCDOT TIP R-3603A	<100	low	Alex	2017	
57	**318.000**	**318.000**	C	Burke County - Drowning Creek UT	100-500	moderate	Burk	2017	
58	**320.000**	**320.000**	E	Hickory Creek - UT (Shelby High School)	<100	low	Clev	2016	
59	**321.000**	**321.000**	B	Gunpowder Creek: South of Hudson	>1000	very high	Cald	2012	
60	**59.000**	59.000	C	Third Creek Rare Plant Site	100-500	moderate	Alex	2010	
61	**157.000**	157.000	AB	First Broad River: Crooked Run Creek	100-500	moderate	Clev	2010	
62	**158.000**	158.000	D	P Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork ar	100-500	moderate	Cata	2016	
63				Rock Barn Solar Farm	500-1000	high	Cata	2010-2011	I don't think NHP knows about this one. Location - Not processed per agreement with P Not processed per agreement with P

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
1	3	3852	H	Beaverdam Creek/3 mi east of Travelers Rest				1964	2009	GREE			
1	5	7689	CD	Sagittaria Hydrology Site		150	200	1991	2008	GREE			Doug Rayner (Wofford College) - emailed 12/12/17
1	6	1160	CD	Junction of SSR173 and SSR 262		75	100	1991	2008	GREE			
1	8	4875	BD	UT Beaverdam Creek/S-903		150		1991	2008	GREE			
1	15	1713	AC	DNR Bunched Arrowhead Preserve		1		1991	2010	GREE	Y	DNR Bunched Arrowhead Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
1	52	730	AC	DNR Belvue Springs Heritage Preserve		?		1999	2008	GREE		"numerous clumps", DNR Belvue Springs HP. Is this the same as the Bunched Arrowhead Preserve?	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
2	10	7931	H?	UT Enoree River				1985	2010	GREE			
2	51	6287	BC	DNR Clear Creek Heritage Preserve		1		1999	2008	GREE	Y	DNR Clear Creek Heritage Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	22	1649	BD	UT Tyger River/south of S-75		50	100	1991	2008	SPAR		same as 9058	
3	23	9058	BD	UT Tyger River/south of S-75						SPAR		same as 1649 (duplicate plant count)	
4	2	7399	BD	1.5 mi south of Gowensville/SC14		150		1991	2008	GREE			
4	4	3101	CD	Fairview Farms		75		1991	2008	SPAR			
4	24	6179	CD	UT Motlow Creek		50	100	1991	2008	SPAR			
4	32	5677	BD	Page Creek at Landrum HS		155		1991	2008	SPAR			
4	33	4879	BD	NW of Junction SC11 and SC14		168		1991	2008	GREE			
4	36	1993	BD	Clear Branch Creek		303		1991	2008	SPAR			
4	38	3367	BD	UT Spivey Creek	+	1000		1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
4	39	8503	CD	1 mi SW of US176 and S-209 in Ingleside		66		1991	2008	SPAR			
4	40	8504	BD	UT Clear Branch Creek		221		1991	2008	SPAR			
4	41	1460	CD	SC 14 and High Farm Road		50	100	1991	2008	SPAR			
4	42	8856	BD	1/4 mi E of SC14 and South Pacolet River		189		1991	2008	GREE/SPAR			
4	49	1450	AB	UT Page Creek/Campbell Ave		750	800	2001	2008	SPAR	?	2001 "new Spartanburg Water Systems preserve"	Spartanburg Water System (who?)
4	50	1449	BD	Page Creek Sewer Line		400	550	2001	2008	SPAR	?	2001 "an easment is being sought"	Spartanburg Water System (who?)
4	54	2719	BD	Headwater UT Wolfe Creek		400		2001	2008	SPAR	?	"On City of Landrum Property"	
4	59	13002	BD	Beaver Dam Creek/MetCalf		250	500	2005	2011	SPAR			
5	30	6009	BD	Greene Creek		100		1994	2008	SPAR			
6	25	878	CD	Lake William Bowen		10	20	1991	2008	SPAR			
7	37	6749	CD	Bear Creek		56		1991	2008	SPAR			
8	35	108	BD	Alverson Grove Church		74		1991	2008	SPAR			
9	34	7788	BD	Arrowood Branch		13		1991	2008	SPAR			
10	31	1730	H?	Blalock Res Site P				1984	2009	SPAR		NCNHP includes EO 7 and 31 as Blalock sites, 5-YR Review includes EO 7 and 29. 2km rule groups EO 7 and 29 together with EO 31 separate (>2km) but close by.	Spartanburg Water System (who?)
11	7	7013	BD	Taylor Blalock Res		3505		2016	2008	SPAR		James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
11	29	6010	H?	Blalock Res Site C				1984	2009	SPAR			Spartanburg Water System (who?)
12	20	3552	BD	Camp Mary Elizabeth		150		1991	2008	SPAR	?	Girl Scouts of America	Fred Parrish
12	21	1984	BD	Beaverdam Creek/Claggett Raintree		700		1991	2008	SPAR	?	SC Nature Conservancy	Kristen Austin (TNC SC) emailed 12/12/17, or Fred Parrish
12	55	2486	CD	UT North Tyger River/Woodridge		50		2001	2008	SPAR			
13	9	7930	CD	Chinquapin Creek		?		1991	2008	SPAR		"two small colonies"	Fred Parrish
13	13	6456	BD	UT Cleveland Park Lake		50		1991	2008	SPAR	?	City of Spartanburg - Cleveland Park	Fred Parrish
13	19	3551	BC	USC-Upstate		25	50	1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
13	46	2369	CD	Shoally Creek		25		1998	2008	SPAR			
13	53	8981	BC	USC-Upstate		250	300	2000	2008	SPAR		Is this a part of other USC population?	Doug Rayner (Wofford College) - emailed 12/12/17
13	56	6523	BD	Lawsons Fork Creek on US221		200	250	2001	2008	SPAR			
14	11	6097	AB	DNR Peters Creek Heritage Preserve		3306		2016	2008	SPAR	Y	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	14	2791	AB	DNR Peters Creek Heritage Preserve		5000		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve, Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	26	5183	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	27	4476	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	28	8667	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	47	6953	U	Cannon Campground Road and Kelly Road				1998	2008	SPAR			
14	48	2769	U	Kelly Road				1998	2008	SPAR			
14	57	4312	BD	Lincoln Memorial Cem/Cannon Campground Rd		450	600	1997	2012	SPAR			
15	16	916	BC	Cowpens NBF - Site 1		2823		2016	2008	CHER		US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
15	17	5173	BC	Cowpens NBF - Site 3	+	130		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
15	18	6825	BC	Cowpens NBF - Site 2		50		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
16	1	235	BD	Cherokee Creek/SC 11		200		1991	2008	CHER			
16	44	3124	H?	SW side of SC 11 - 5.45 mi NW of I-85				1984	2009	CHER			
16	45	5554	U	Lenzer Circle				1989	2008	CHER			
16	60	13003	BD	Cherokee Creek/Bonner and Robin School Roads		1500		2004	2011	CHER			
17	43	7286	CD	McKee Drive		20		1991	2008	CHER			
18	12	1322	H?	Horse Creek				1986	2012	CHER			
				Boulder Creek Subdivision - Jordan Road		15	20	2006		GREE	Y	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
				Gateway Elementary School						GREE		"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

Populations	EO Number	EO Rank	Site Name	Total Estimated Plants	Resilience Category	Last Observed	County	Notes	RNR Notes
1	7; 29	BD	Taylor Blalock Res	>1000	Very High	2016	SPAR	James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	
2	11; 14; 26; 27; 28; 47; 48; 57	AB	DNR Peters Creek Heritage Preserve	>1000	Very High	2016	SPAR	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	
3	16; 17; 18	BC	Cowpens NBF - Site 1	>1000	Very High	2016	CHER	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	
4	?	?	Boulder Creek Subdivision - Jordan Road	<100	Low	2016	GREE	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17). Last seen in 2016 per F. Hollemon (02/06/18).	Two locations - [redacted] Coordinates located from paper maps.
5	?	?	Gateway Elementary School	<100	Low	2017	GREE	"number of clumps around trees near streams" (F. Hollemon 12/12/17). Last seen in 2017, not a full survey just noticed plants likely additional plants in wooded area. Plants located directly behind school per F. Hollemon (02/06/18)	"Directly behind school" is approximately [redacted]

From: Reid, Rebekah N
To: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Thursday, February 15, 2018 3:30:47 PM
Importance: High

Mark,

Are the tables that Mike sent what you needed? If not, I can add the population numbers to the Resilience Table I put together. Just let me know.

Thanks.

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Feb 15, 2018 at 2:11 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Sure thing. Here are the 2 excel files used to populate the current conditions table. Look on the sheets labeled "population only"....hope this helps!
>
> Mike
>
> On Thu, Feb 15, 2018 at 1:53 PM, Endries, Mark <mark_endries@fws.gov> wrote:
>
> > Looks great. Could I get it with the Population number or EOID so I can link it in the GIS?
> >
> > Mark
> >
> > **Mark Endries**
> > USFWS
> > 160 Zillicoa St
> > Asheville, NC 28801
> > Office: 828.258.3939 ext. 231
> > Mobile: 828.215.1740
> >
> > On Thu, Feb 15, 2018 at 10:51 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > Found some nifty excel functions so this was a snap. Attached is the updated resilience table sorted by resilience category, then county, then site name. Also included is a county summary table with the total in each resilience category and total current populations per county. As a side note, each county in our range has at least one current population in the table.
> > >
> > > Rebekah Reid

US Fish and Wildlife Service
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On Thu, Feb 15, 2018 at 9:06 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> I can work on the table update. I've got some time this morning and tomorrow morning.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
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> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> On Thu, Feb 15, 2018 at 9:02 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Agreed....never mind on the map....although, once we get to the recommendation meeting, we might decide to produce a map printout that captures that...seems the decision makers like to see maps....but we'll cross that bridge once we get to it.
> >
> > Thanks!
> >
> > Mike
> >
> > On Thu, Feb 15, 2018 at 8:58 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > If we add county to that table and a summary at the bottom, that may do the same thing as the map...
> > >
> > > Rebekah Reid
> > >
> > > US Fish and Wildlife Service
> > > Asheville Ecological Services Field Office
> > > 160 Zillicoa St.
> > > Asheville, NC 28801
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> > > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***

On Thu, Feb 15, 2018 at 8:51 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Sorry for the confusion.....I've attached a Word document. Take a look at the Table on page 3. These are the populations we are using for Current Resilience, and it is the table I am hoping to capture with a map.....I can certainly be convinced that a map is not needed....perhaps the table by itself is sufficient. What do you guys think?
>
> Mike
>
> On Thu, Feb 15, 2018 at 8:23 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > They are color coded by number of EOs. I think what Mike is thinking is breaking that down another level and indicating how many of the EOs in each county are very high, high, moderate, and low to show resiliency.
> >
> > Mike - am I catching that correctly?
> >
> > Rebekah Reid
> >
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To: Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Friday, February 16, 2018 7:24:00 AM
Importance: High

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From: Reid, Rebekah N
To: Endries, Mark
Subject: Re: Map for current conditions for HENA
Date: Friday, February 16, 2018 9:11:48 AM
Attachments: Resilience Table 2.0 with Pop Numbers.xlsx
Importance: High

Here you go...

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Glade Creek, Alex County	North Carolina	Alexander	2017	>1000	very high	308
Catawba River: Hoyle Crk-Micol Crk	North Carolina	Burke	2013	>1000	very high	178
Island Creek Heath Bluff	North Carolina	Burke	2016	>1000	very high	29
Gunpowder Creek: South of Hudson	North Carolina	Caldwell	2012	>1000	very high	321
Peaked Top Rare Plant Site/Foothills Landfill	North Carolina	Caldwell	2014	>1000	very high	227
Jacob Fork West Corridor	North Carolina	Catawba	2012	>1000	very high	243
Murrays Mill/Upper Balls Creek NA	North Carolina	Catawba	2013	>1000	very high	96
NCDOT TIP: R-2824	North Carolina	Catawba	2015	>1000	very high	31
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	North Carolina	Catawba	2013	>1000	very high	179
Cowpens NBF - Site 1	South Carolina	Cherokee	2016	>1000	very High	3
Cliffside Steam Station	North Carolina	Clev/Ruth	2016	>1000	very high	276
Broad River/Sandy Run NA	North Carolina	Cleveland	2012	>1000	very high	100
Broad River: Brushy Creek	North Carolina	Cleveland	2016	>1000	very high	217
Buffalo Creek: Kings Mountain Res	North Carolina	Cleveland	2016	>1000	very high	216
Buffalo Creek: Tributaries N and S of SR 2047	North Carolina	Cleveland	2012	>1000	very high	214
Rhyne Conservation Preserve	North Carolina	Lincoln	2016	>1000	very high	302
Mill Creek Forest and Seep	North Carolina	Polk	2016	>1000	very high	23
New Hope Springhead Swamp	North Carolina	Polk	2016	>1000	very high	125
Big Horse Creek Rare Plant Site	North Carolina	Rutherford	2015	>1000	very high	99
Broad River: Floyds Creek	North Carolina	Rutherford	2016	>1000	very high	177
Davenport Road/Mountain View Rare Plant Site	North Carolina	Rutherford	2016	>1000	very high	176
Facebook Site	North Carolina	Rutherford	2016	>1000	very high	154
Floyds Creek Tributray Rare Plant Site	North Carolina	Rutherford	2012	>1000	very high	245
New Bethel Rare Plant Site	North Carolina	Rutherford	2015	>1000	very high	247
Richardson Creek trib above Toms Lake	North Carolina	Rutherford	2016	>1000	very high	312
DNR Peters Creek Heritage Preserve	South Carolina	Spartanburg	2016	>1000	very High	2
Taylor Blalock Res	South Carolina	Spartanburg	2016	>1000	very High	1
Little Gunpowder Creek Rare Plant Site 1	North Carolina	Caldwell	2015	500-1000	high	44
Little Gunpowder Creek Rare Plant Site 2	North Carolina	Caldwell	2015	500-1000	high	77
Northern Catawba County	North Carolina	Catawba	2017	500-1000	high	316
Rock Barn Solar Farm	North Carolina	Catawba	2010-2011	500-1000	high	9999
Buffalo Creek Rare Plant Site	North Carolina	Cleveland	2012	500-1000	high	232
Third Creek Rare Plant Site	North Carolina	Alexander	2010	100-500	moderate	59
Hickory Area	North Carolina	Burk/Cata/Cald	2016	100-500	moderate	295
Burke County - Drowning Creek UT	North Carolina	Burke	2017	100-500	moderate	318
Simms Hill/Little River Uplands	North Carolina	Burke	2015	100-500	moderate	304
Smith Cliff/Henry Fork River	North Carolina	Burke	2015	100-500	moderate	303
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	North Carolina	Catawba	2016	100-500	moderate	158
NCDOT TIP R-2824	North Carolina	Catawba	2015	100-500	moderate	32
South Fork Catawba River, Henry Fork	North Carolina	Catawba	2007	100-500	moderate	252
Broad River/Sandy Run NA	North Carolina	Cleveland	2012	100-500	moderate	274
Brushy Creek Headwaters	North Carolina	Cleveland	2014	100-500	moderate	298
First Broad River: Crooked Run Creek	North Carolina	Cleveland	2010	100-500	moderate	157
No Business Creek, Boyd Tract	North Carolina	Cleveland	2007	100-500	moderate	272
West Shelby Mesic Slope	North Carolina	Cleveland	2016	100-500	moderate	93
UT of Kings Mountain Res	North Carolina	Gaston	2012	100-500	moderate	296
Buffalo Shoals Creek	North Carolina	Iredell	2014	100-500	moderate	275
Cat Square Heartleaf Forest	North Carolina	Lincoln	2012	100-500	moderate	98
Collinsville (Hughes) Creek Slopes	North Carolina	Polk	2016	100-500	moderate	311
Fox Knoll Farm	North Carolina	Polk	2016	100-500	moderate	287
Forest City: Adj to Isothermal CC	North Carolina	Rutherford	2010	100-500	moderate	292
Jonas Road Rare Plant Site	North Carolina	Rutherford	2014	100-500	moderate	248
NCDOT TIP R-3603A	North Carolina	Alexander	2017	<100	low	317
South Mountains Pleasant Grove Uplands	North Carolina	Burke	2016	<100	low	309
Gunpowder Creek	North Carolina	Caldwell	2012	<100	low	291
Killian Crossroads	North Carolina	Catawba	2010	<100	low	293
Pott Creek	North Carolina	Catawba	2012	<100	low	271
Beaverdam Crk at First Broad River	North Carolina	Cleveland	2011	<100	low	297
Buffalo Creek: Potts Creek	North Carolina	Cleveland	2012	<100	low	208
Buffalo Creek: Ravine	North Carolina	Cleveland	2007	<100	low	206
Hickory Creek - UT (Shelby High School)	North Carolina	Cleveland	2016	<100	low	320
Boulder Creek Subdivision - Jordan Road	South Carolina	Greenville	2016	<100	low	4

County	Very High	High	Moderate	Low	Totals
Alexander	1		1	1	3
Burk/Cata/Cald			1		1
Burke	2		3	1	6
Caldwell	2	2		1	5
Catawba	4	2	3	2	11
Cherokee	1				1
Clev/Ruth	1				1
Cleveland	4	1	5	4	14
Gaston			1		1
Greenville				2	2
Iredell			1	2	3
Lincoln	1		1	2	4
Polk	2		2		4
Rutherford	7		2		9
Spartanburg	2				2
Totals	27	5	20	15	67

% of Total	40	7	30	22	100
Cumulative %	40	48	78	100	

Gateway Elementary School	South Carolina	Greenville	2017	<100	low	5
Fanjoy Road Site	North Carolina	Iredell	2015	<100	low	306
Levan Family Farm	North Carolina	Iredell	2013	<100	low	300
Lincoln County, SR-1314	North Carolina	Lincoln	2014	<100	low	299
Northeast Lincolnton: UT Walker Branch	North Carolina	Lincoln	2009	<100	low	279

From: Endries, Mark
To: Marshall, Michael E; Reid, Rebekah N
Subject: Re: Map for current conditions for HENA
Date: Friday, February 16, 2018 9:53:09 AM
Attachments: CellCenterpointHENAMaxentScoresWithPopAndResilience.xlsx
Importance: High

I've updated the spreadsheet I sent yesterday to include the population number and resilience scores. The data is all there, but I have not distilled it down to summarize any relationship between maxent scores and resilience. I can work on this some next week.

Thanks!

Mark

Mark Endries
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Mobile: 828.215.1740

On Thu, Feb 15, 2018 at 2:10 PM, Endries, Mark <mark_endries@fws.gov> wrote:

> Hi Mike,
>
> Yes, the data for Table 1 can be gleaned from the latest maxent output.
>
> Here's the data for Table 2:
>
> | | Acres | Square Miles | % of total |
> |---|---|---|---|
> | Total Area | 5,029,119.60 | 7,858.03 | |
> | Maxent Over 0.4 | 332,494.32 | 519.52 | 6.61% |
> | Maxent Over 0.6 | 146,712.63 | 229.24 | 2.92% |
> | Maxent over 0.8 | 22,677.96 | 35.43 | 0.45% |
>
> I've attached the excel spreadsheet needed to sift through the data to calculate Table 3. Mean maxent score is .67, median is .72. Low score is 0, high score is 0.92. Missing from this is the link to resilience. I've asked for an updated resiliency table to include the Population number so I can link everything together.
>
> For table 4 we can just list the mean AUC (0.849). For AUC a value of 0.5 is no better than random. Lower means it's worse than random. A higher AUC means greater predictive power. Our AUC of 0.849 is decent, not stellar, but decent.
>
> We can chat more tomorrow, just trying to rush some of this out now in case you wanted to use it in the document you are sending out on Monday.
>
> Thanks!
>
> Mark

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On Thu, Feb 15, 2018 at 10:31 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Looks great, thanks Mark!
>
> As for tables....some of these are embedded in the output (#1 below), but my initial thoughts:
>
> 1--Table showing the variables included and their contribution to the model
>
> 2--Table showing acreage of habitat...thinking acres of orange; acres of red; and total acres
>
> 3--I haven't thought this one through very well, so please correct me if you think this is irrelevant.....but a summary, or summary table, of how the actual populations fell out within the predicted habitat....just trying to see if the majority of the current populations fall within the higher ranked habitat....also, did the populations we categorized as very high and/or high end up in the high ranked habitat? Also, did low resilience populations tend to fall in the lower ranked habitat?
>
> 4--I'm not very familiar with Maxent, and I admit to being weak in stats, but is there some summary stats we can show for a goodness of fit, or strength of the model? Is the program calculating AIC scores for all potential models? Any type of basic summary stats that show the model is a good one, in a nice clean simple fashion, would be awesome.
>
> Thanks,
>
> Mike
>
> On Thu, Feb 15, 2018 at 10:16 AM, Endries, Mark <mark_endries@fws.gov> wrote:
>
> > Hi All,
> >
> > Here is a Maxent output map and the latest model output. Last night I ran a 10 replicate model. This runs 10 separate models then smashes them all together to get an average output. I didn't have it create the response curves or jackknife tests, we can use the single run output for that.
> >
> > What table summaries are needed?
> >
> > Thanks!
> >
> > Mark
> >
> > **Mark Endries**

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On Thu, Feb 15, 2018 at 9:06 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> I can work on the table update. I've got some time this morning and tomorrow morning.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> On Thu, Feb 15, 2018 at 9:02 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Agreed....never mind on the map....although, once we get to the recommendation meeting, we might decide to produce a map printout that captures that...seems the decision makers like to see maps....but we'll cross that bridge once we get to it.
> >
> > Thanks!
> >
> > Mike
> >
> > On Thu, Feb 15, 2018 at 8:58 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > If we add county to that table and a summary at the bottom, that may do the same thing as the map...
> > >
> > > Rebekah Reid
> > >
> > > US Fish and Wildlife Service
> > > Asheville Ecological Services Field Office
> > > 160 Zillicoa St.
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> > > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
> > >
> > > On Thu, Feb 15, 2018 at 8:51 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
> > >
> > > > Sorry for the confusion.....I've attached a Word document. Take a look at the

Table on page 3. These are the populations we are using for Current Resilience, and it is the table I am hoping to capture with a map.....I can certainly be convinced that a map is not needed....perhaps the table by itself is sufficient. What do you guys think?

Mike

On Thu, Feb 15, 2018 at 8:23 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> They are color coded by number of EOs. I think what Mike is thinking is breaking that down another level and indicating how many of the EOs in each county are very high, high, moderate, and low to show resiliency.
>
> Mike - am I catching that correctly?
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
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> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> On Thu, Feb 15, 2018 at 8:00 AM, Endries, Mark <mark_endries@fws.gov> wrote:
>
> > I'm not following. Aren't the counties already color coded?
> >
> > Mark
> >
> > **Mark Endries**
> > USFWS
> > 160 Zillicoa St
> > Asheville, NC 28801
> > Office: 828.258.3939 ext. 231
> > Mobile: 828.215.1740
> >
> > On Thu, Feb 15, 2018 at 7:55 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
> >
> > > I think this would be an efficient way to visually represent that data. We could also get creative with the table sorting to make it easier to read...
> > >
> > > Rebekah Reid
> > >
> > > US Fish and Wildlife Service
> > > Asheville Ecological Services Field Office
> > > 160 Zillicoa St.
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On Wed, Feb 14, 2018 at 1:06 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hey guys,
>
> I was thinking about figures and tables for the current conditions section....typically, I like to produce a figure with the locations of all of the populations across the range...color coded by resilience category....however, due to not showing locations of these populations, we're gonna have to be clever.
>
> Mark, perhaps a figure similar to the one you produced showing # of EOs in each county....thinking the figure would show tallies within each county for very high, high, moderate, and low....just a visual representation of the data embedded in the current conditions table.
>
> Thoughts?
>
> Thanks,
>
> Mike
>
> --
> Mike Marshall
> SSA Program Specialist
> U.S. Fish and Wildlife Service Region 4
> Cell: 512-461-6217
> Alternate email: mmarshall@ag.tamu.edu
>
> **Work Schedule 1st Week**
> Monday-Thursday --> In Office 7:30-4:30 CST
>
> **Work Schedule 2nd Week**
> Monday-Thursday --> In Office 7:30-4:30 CST
>
> *This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act and may be disclosed to third parties.*

--
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Monday-Thursday --> In Office 7:30-4:30 CST

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State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.784884989	1292490.002	1511130.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.786536992	1292520.002	1511130.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.781584978	1292460.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.779954016	1292490.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.778320014	1292520.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.789830983	1292550.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.782473981	1292610.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.790894985	1292640.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.790894985	1292670.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792630017	1292700.002	1511100.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.776681006	1292400.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.775038004	1292430.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.74159801	1292460.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.684307992	1292490.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.683315992	1292550.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.782473981	1292580.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.785838008	1292610.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.785838008	1292640.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.790894985	1292670.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.801297009	1292700.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.799574971	1292730.002	1511070.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.770087004	1292400.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.661945999	1292460.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.726343989	1292580.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.728079021	1292610.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.672703981	1292640.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.67583102	1292670.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.790894985	1292700.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.797846973	1292730.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.80301398	1292760.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.796113014	1292790.002	1511040.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792630017	1292730.002	1511010.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.820810974	1292760.002	1511010.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.808129013	1292790.002	1511010.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.799574971	1292820.002	1511010.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.763490975	1292760.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.818392992	1292790.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.816536009	1292820.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.811510026	1292850.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.828041971	1293000.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.807623029	1293030.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.241733	1293060.002	1510980.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792630017	1292790.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804724991	1292820.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.81486702	1292850.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.821506023	1292880.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.823149025	1292910.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.826417983	1292940.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.832017004	1292970.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.81486702	1293000.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.724786997	1293030.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.732369006	1293060.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.850243986	1293090.002	1510950.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.720170975	1292850.002	1510920.005	29	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.809822023	1292880.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.742851019	1292910.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.733457029	1292940.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.735342979	1292970.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.660423994	1293000.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.660875976	1293030.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.668271005	1293060.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.817951977	1293090.002	1510920.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.69085598	1292880.002	1510890.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.704990029	1292910.002	1510890.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.659672022	1292940.002	1510890.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.703706026	1293060.002	1510890.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.807623029	1293090.002	1510890.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.726687014	1293090.002	1510860.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.842589021	1293120.002	1510860.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.824787021	1293120.002	1510830.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.839457989	1293150.002	1510830.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.703706026	1293120.002	1510800.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.79035902	1293150.002	1510800.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.831510007	1293180.002	1510800.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.689423978	1293150.002	1510770.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.699568987	1293180.002	1510770.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.730477989	1293210.002	1510770.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.833617985	1293240.002	1510710.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.706032991	1292970.002	1510650.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804925025	1292490.002	1510620.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.828041971	1292910.002	1510620.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.829659998	1292940.002	1510620.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792110026	1293060.002	1510620.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.752797008	1292490.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.794373989	1292520.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.811510026	1292700.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.808129013	1292730.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.818198979	1292760.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.819854975	1292790.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.816536009	1292820.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792110026	1292850.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.786840975	1292880.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.83040899	1292910.002	1510590.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.810020983	1292550.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.774366975	1292700.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.667439997	1292730.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.725883007	1292760.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.660875976	1292790.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.706080019	1292820.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.705635011	1292850.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.82823199	1292880.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.840184987	1293060.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.834710002	1293090.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.829659998	1293120.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.828041971	1293150.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.735342979	1293180.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.806125998	1293210.002	1510560.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.637865007	1292790.002	1510530.005	29	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.65694797	1292820.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.779742002	1292850.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.83040899	1292910.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.83040899	1292940.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.740980029	1292970.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.744719982	1293000.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.816536009	1293030.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.720978022	1293060.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.711408019	1293090.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.727780998	1293120.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.703706026	1293150.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.707561016	1293180.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.776163995	1293210.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.826609015	1293240.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.809822023	1293270.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804724991	1293300.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804724991	1293360.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.801297009	1293390.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.796113014	1293420.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792630017	1293450.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.790894985	1293480.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.782473981	1293510.002	1510530.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.701775014	1292820.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.816536009	1292850.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.829900026	1292880.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.821506023	1292910.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.816536009	1292940.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.618224978	1292970.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.668850005	1293000.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.664928019	1293030.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.662966013	1293060.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.694557011	1293090.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.589488983	1293120.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.585776985	1293150.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.585776985	1293180.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.611488998	1293210.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.813190997	1293240.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.824979007	1293270.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.81486702	1293300.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.813970029	1293330.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804724991	1293360.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.797846973	1293390.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792630017	1293420.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.785838008	1293450.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.784151971	1293480.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.747573018	1293510.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.797448993	1293540.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.787865996	1293570.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.724165976	1293600.002	1510500.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.794373989	1292490.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.797846973	1292520.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.809822023	1292820.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.833113015	1292850.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.828794003	1292880.002	1510470.005	29	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.696168005	1292910.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.692287982	1292940.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.674724996	1292970.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.668850005	1293000.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.659039021	1293030.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.655125022	1293060.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.714523971	1293090.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.585776985	1293210.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.714433014	1293240.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804724991	1293270.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.806429982	1293300.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.722078025	1293330.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.773166001	1293360.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.764173985	1293390.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.813528001	1293420.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.776857018	1293450.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.709806025	1293480.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.714106977	1293510.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.745173991	1293540.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.724165976	1293570.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.72112298	1293600.002	1510470.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.760242999	1292370.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.785838008	1292400.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.794373989	1292490.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.785838008	1292790.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.77256602	1292820.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.813970029	1292850.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.83385402	1292880.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.727442026	1292970.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.687110007	1293000.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.756316006	1293270.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.759846985	1293300.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.764173985	1293330.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.748555005	1293360.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.745020986	1293390.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.74327302	1293420.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.766053975	1293450.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.757453978	1293480.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.741756022	1293510.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.738325	1293540.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.71894598	1293570.002	1510440.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.787519991	1292460.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.744090021	1292790.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.767134011	1292820.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.779742002	1292850.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.720170975	1292880.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.68255502	1292910.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.794120014	1292940.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.733120024	1293000.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.719829023	1293030.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.683212996	1293060.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.74327302	1293300.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.74327302	1293330.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.753755987	1293360.002	1510410.005	29	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.738020003	1293390.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.748579979	1293420.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.829539001	1293450.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.799046993	1293480.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.679651976	1293510.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.684156001	1293540.002	1510410.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.742361009	1292790.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.758069992	1292820.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.77076	1292850.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.710595012	1292880.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.669399977	1292910.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.720170975	1292940.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.741262972	1292970.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.752435029	1293000.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.728322983	1293060.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.772660017	1293090.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.72972399	1293120.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.767738998	1293150.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.734559	1293420.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.792677999	1293450.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.797448993	1293480.002	1510380.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.748579979	1292790.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.755481005	1292820.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.741524994	1292850.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.746782005	1292880.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.690407991	1292910.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.694109023	1292940.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.705635011	1292970.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.727780998	1293000.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.804472983	1293030.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.721737027	1293090.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.777956009	1293120.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.613456011	1293150.002	1510350.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.733269989	1292850.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.738453984	1292880.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.740207016	1292910.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.747211993	1292940.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.696433008	1292970.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.706080019	1293000.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.720978022	1293030.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.831510007	1293060.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.823149025	1293120.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.678650975	1293150.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.611488998	1293180.002	1510320.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.741524994	1292940.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.692707002	1292970.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.697906017	1293000.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.713326991	1293030.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.750522971	1293060.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.725543022	1293150.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.617392004	1293180.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.700761974	1293330.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.736715972	1293360.002	1510290.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.374882013	1293390.002	1510290.005	29	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.415977001	1293030.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.526426971	1293060.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.819854975	1293150.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.783302009	1293180.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.723981977	1293210.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.722078025	1293240.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.701775014	1293270.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.752089977	1293300.002	1510260.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.728583992	1293030.002	1510230.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.825545013	1293060.002	1510230.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.819854975	1293150.002	1510230.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.779742002	1293180.002	1510230.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.725883007	1293210.002	1510230.005	29	2000	very high
NC	14504	Hexastylis naniflora	29	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	1995-03-21	Current	A	2-High	0.373106003	1293676.469	1510541.206	29	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.856280982	1287000.002	1449600.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.847010016	1287000.002	1449570.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.771614015	1287510.002	1449570.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.848545015	1287000.002	1449540.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.777010977	1287480.002	1449540.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.82593298	1287000.002	1449510.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.778800011	1287450.002	1449510.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.853103995	1287000.002	1449480.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.780584991	1287450.002	1449480.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.689669013	1287450.002	1449450.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.864750028	1287000.002	1449420.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.850072026	1287030.002	1449420.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.782365024	1287420.002	1449420.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.642987013	1287450.002	1449420.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.571560025	1287480.002	1449420.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.85789001	1287000.002	1449390.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.850072026	1287030.002	1449390.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.855467975	1287390.002	1449390.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.81101501	1287420.002	1449390.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.778800011	1287450.002	1449390.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.859019995	1287000.002	1449360.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.850072026	1287030.002	1449360.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.851768017	1287390.002	1449360.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.848722994	1287420.002	1449360.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.859019995	1287000.002	1449330.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.78818202	1287030.002	1449330.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.812698007	1287390.002	1449330.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.827468991	1287000.002	1449300.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.762144983	1287030.002	1449300.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.816044986	1287390.002	1449300.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.85789001	1286970.002	1449270.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.827468991	1287000.002	1449270.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.82593298	1287030.002	1449270.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.855744004	1287000.002	1449240.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.824304998	1287030.002	1449240.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.871715009	1287360.002	1449240.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.862764001	1286940.002	1449210.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.677972019	1287840.002	1449210.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.863699019	1286940.002	1449180.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.773418009	1287810.002	1449180.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.681877971	1287840.002	1449180.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.864602029	1286940.002	1449150.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.683827996	1287780.002	1449150.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.681877971	1287810.002	1449150.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.679925978	1287840.002	1449150.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.864602029	1286940.002	1449120.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.869526982	1287690.002	1449120.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.794885993	1287720.002	1449120.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.778800011	1287750.002	1449120.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.687723994	1287780.002	1449120.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.825245023	1286910.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.723380029	1286940.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.772136986	1286970.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.741284013	1287510.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.771288991	1287540.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.86294198	1287570.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.864395976	1287600.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.867447019	1287630.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.83020103	1287660.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.749074996	1287690.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.749074996	1287720.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.74535203	1287750.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.687723994	1287780.002	1449090.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.865502	1286910.002	1449060.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.723380029	1286940.002	1449060.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.829989016	1286970.002	1449060.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.867199004	1287480.002	1449060.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.726167023	1286940.002	1449030.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.741641998	1287360.002	1449030.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.874321997	1287390.002	1449030.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.86836803	1287420.002	1449030.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.869287014	1287450.002	1449030.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.72734803	1286910.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.722154021	1286940.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.796947002	1287300.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.724026978	1287330.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.708307981	1287360.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.70638299	1287390.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.836596012	1287420.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.865842998	1287450.002	1449000.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.722572982	1286910.002	1448970.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.83783102	1287270.002	1448970.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.728914976	1287300.002	1448970.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.704455018	1287330.002	1448970.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.69865799	1287360.002	1448970.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.719781995	1286910.002	1448940.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.731987	1287240.002	1448940.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.724026978	1287270.002	1448940.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.699105024	1287300.002	1448940.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.691493988	1286910.002	1448910.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.866711974	1286940.002	1448910.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.880111992	1287210.002	1448910.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.782307029	1287240.002	1448910.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.752882004	1287390.002	1448910.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.772213995	1287420.002	1448910.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.691493988	1286910.002	1448880.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.868728995	1286940.002	1448880.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.876293004	1287180.002	1448880.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.795614004	1287210.002	1448880.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.581533015	1287390.002	1448880.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.678608	1287420.002	1448880.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.861710012	1286940.002	1448850.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.915365994	1287150.002	1448850.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.875371993	1287180.002	1448850.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.647028983	1286910.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.861710012	1286940.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.829937994	1286970.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.694622993	1287000.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.743212998	1287030.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.914669991	1287060.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.914669991	1287090.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.852380991	1287120.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.885003984	1287150.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.83869499	1287180.002	1448820.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.829937994	1286940.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.694622993	1286970.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.746756971	1287000.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.841244996	1287030.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.834089994	1287060.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.806276023	1287090.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.854180992	1287120.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.837850988	1287150.002	1448790.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.649567008	1286910.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.687092006	1286940.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.71685499	1286970.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.798434973	1287000.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.834089994	1287030.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.824774027	1287060.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.909430027	1287120.002	1448760.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.666768014	1286910.002	1448730.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.697598994	1286940.002	1448730.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.744029999	1286970.002	1448730.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.720138013	1287000.002	1448730.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.726517975	1286970.002	1448700.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.721252978	1287000.002	1448700.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.787263989	1286970.002	1448670.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.618583024	1286790.002	1448640.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.632565022	1286820.002	1448640.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.788430989	1286970.002	1448640.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.839374006	1286850.002	1448610.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.840349019	1286880.002	1448610.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.795204997	1286910.002	1448610.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.794417977	1286940.002	1448610.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.777384996	1286820.002	1448580.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.728214979	1286850.002	1448580.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.73893702	1286880.002	1448580.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.741424024	1286910.002	1448580.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.41424799	1286940.002	1448580.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.756990016	1286820.002	1448550.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.751085997	1286850.002	1448550.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.752399027	1286880.002	1448550.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.768579006	1286940.002	1448550.005	100	2000	very high
NC	12161	Hexastylis naniflora	51	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-02-06	Current	A	2-High	0.804343998	1286820.002	1448520.005	100	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.506470978	1282350.002	1528530.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.770762026	1282710.002	1528530.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.752002001	1282740.002	1528530.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.540371001	1282320.002	1528500.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.51284498	1282350.002	1528500.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.717253983	1282650.002	1528500.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.785417974	1282680.002	1528500.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.770762026	1282710.002	1528500.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.754528999	1282740.002	1528500.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.706766009	1282230.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.589410007	1282260.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.529573977	1282290.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.515403986	1282320.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.51029098	1282350.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.731539011	1282650.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.634546995	1282680.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.722790003	1282710.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.705772996	1282740.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.679252028	1282800.002	1528470.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.705449998	1282230.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.586740017	1282260.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.525694013	1282290.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.641272008	1282680.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.726684988	1282710.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.718882024	1282740.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.763312995	1282770.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.692556024	1282800.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.675247014	1282830.002	1528440.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.713329971	1282230.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.539532006	1282260.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.533024013	1282290.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.691807985	1282680.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.691807985	1282710.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.718882024	1282740.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.714962006	1282770.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.688573003	1282800.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.677917004	1282830.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.652469993	1282860.002	1528410.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.719864011	1282230.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.547378004	1282260.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.675835013	1282410.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.537366986	1282440.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.556104004	1282470.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.70370698	1282680.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.68383503	1282710.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.718882024	1282740.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.705772996	1282770.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.693881989	1282800.002	1528380.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.684581995	1282830.002	1528380.005	227	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.608613014	1282110.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.734243989	1282230.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.618408978	1282260.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.60681802	1282410.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.543449998	1282440.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.604587018	1282470.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.726364017	1282710.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.807134986	1282740.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.70709002	1282800.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.679747999	1282830.002	1528350.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.532167017	1282110.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.603245974	1282140.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.71201998	1282260.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.685166001	1282380.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.605476022	1282410.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.621097028	1282440.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.710708022	1282470.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.609955013	1282500.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.543893993	1282530.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.740851998	1282740.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.722790003	1282770.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.693048	1282800.002	1528320.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.635891974	1282380.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.555261016	1282410.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.617561996	1282440.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.72766	1282470.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.614874005	1282500.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.609955013	1282530.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.551760972	1282560.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.737972021	1282710.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.685166001	1282740.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.708890021	1282770.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.691721976	1282800.002	1528290.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.647993982	1282380.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.557896972	1282410.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.621595025	1282500.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.611298025	1282530.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.740532994	1282710.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.689154029	1282740.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.616217971	1282770.002	1528260.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.741811991	1282350.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.625629008	1282380.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.563180029	1282410.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.612640977	1282530.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.737972021	1282710.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.638583004	1282740.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.573302984	1282770.002	1528230.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.607270002	1282230.002	1528200.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.694459021	1282260.002	1528200.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.74436301	1282350.002	1528200.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.654708982	1282380.002	1528200.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.570252001	1282410.002	1528200.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.736688018	1282710.002	1528200.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.568476021	1282740.002	1528200.005	227	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.550446987	1282200.002	1528170.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.558344007	1282260.002	1528170.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.750892997	1282380.002	1528170.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.579106987	1282410.002	1528170.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.559664011	1282230.002	1528140.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.567600012	1282290.002	1528140.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.705024004	1282380.002	1528140.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.624737978	1282410.002	1528140.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.63280803	1282380.002	1528110.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.626083016	1282410.002	1528110.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.639078975	1282380.002	1528080.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.589293003	1282740.002	1528080.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.587957025	1282230.002	1527990.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.712902009	1282290.002	1527990.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.571578979	1282290.002	1527960.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.579558015	1282320.002	1527960.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.636389017	1282350.002	1527960.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.566275001	1282320.002	1527930.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.564951003	1282350.002	1527930.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.571578979	1282320.002	1527810.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.649420023	1282350.002	1527810.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.711592019	1282380.002	1527810.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.714209974	1282410.002	1527810.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.714209974	1282440.002	1527810.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.672124028	1282470.002	1527810.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.576894999	1282380.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.579558015	1282410.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.58089	1282440.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.584891021	1282470.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.592455983	1282500.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.668112993	1282530.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.672124028	1282560.002	1527780.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.537720978	1282410.002	1527750.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.571578979	1282440.002	1527750.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.571578979	1282470.002	1527750.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.574235976	1282500.002	1527750.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.58089	1282530.002	1527750.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.639532983	1282560.002	1527750.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.599604011	1282590.002	1527720.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.655656993	1282620.002	1527720.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.658339977	1282650.002	1527720.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.663700998	1282680.002	1527720.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.67433399	1282710.002	1527720.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.58089	1282590.002	1527690.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.58355701	1282620.002	1527690.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.58355701	1282650.002	1527690.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.644910991	1282680.002	1527690.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.484167993	1282650.002	1527660.005	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.555140972	1282650.592	1527514.316	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.626083016	1282542.034	1528156.343	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.547821999	1282118.265	1528152.725	227	2000	very high
NC	22306	Hexastylis naniflora	227	Dwarf-flowered Heartleaf	2014-04-19	2014-04-19	2003-04	Current	A	2-High	0.556078017	1282736.134	1527882.367	227	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.739553988	1281270.002	1448580.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.830594003	1281270.002	1448550.005	276	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.541881979	1281210.002	1448520.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.830594003	1281240.002	1448520.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.543796003	1281180.002	1448490.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.833801985	1281210.002	1448490.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.84325999	1281180.002	1448460.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.745810986	1281210.002	1448460.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.846266985	1281150.002	1448430.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.805208981	1281180.002	1448430.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.851258993	1281120.002	1448400.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.846266985	1281150.002	1448400.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.857080996	1281090.002	1448370.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.858262002	1281120.002	1448370.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.806912005	1281150.002	1448370.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.859054983	1281060.002	1448340.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.859247983	1281090.002	1448340.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.840134978	1281120.002	1448340.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.800064027	1281150.002	1448340.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.796606004	1281180.002	1448340.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.385612011	1281210.002	1448340.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.861011982	1281030.002	1448310.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.856088996	1281060.002	1448310.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.848913014	1281090.002	1448310.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.825733006	1281120.002	1448310.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.715701997	1281150.002	1448310.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.851954997	1281030.002	1448280.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.814016998	1281060.002	1448280.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.709948003	1281090.002	1448280.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.823952973	1281000.002	1448250.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.76098299	1281030.002	1448250.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.823952973	1280970.002	1448220.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.654065013	1280820.002	1448040.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.748553991	1280700.002	1448010.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.80289799	1280970.002	1448010.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.772422016	1280760.002	1447980.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.864998996	1280880.002	1447980.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.864998996	1280910.002	1447980.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.683625996	1280640.002	1447920.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.686623991	1280730.002	1447920.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.709586978	1280550.002	1447890.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.748529017	1280580.002	1447890.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.646248996	1280610.002	1447890.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.677851975	1280700.002	1447890.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.528882027	1280520.002	1447860.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.647818983	1280550.002	1447860.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.806931019	1279590.002	1447560.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.811181009	1279620.002	1447560.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.758296013	1279590.002	1447530.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.366338015	1281660.002	1447500.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.780237019	1281690.002	1447500.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.621433973	1281450.002	1447470.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.528882027	1281360.002	1447440.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.734095991	1281390.002	1447440.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.791382015	1281420.002	1447440.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.528882027	1281300.002	1447410.005	276	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.58911401	1281330.002	1447410.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.793277979	1281360.002	1447410.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.228506997	1281150.002	1447380.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.574141979	1281180.002	1447380.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.569118977	1281210.002	1447380.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.58911401	1281240.002	1447380.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.72033298	1281270.002	1447380.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.339134991	1281840.002	1447170.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.348013014	1281810.002	1447140.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.764247	1281840.002	1447140.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.771723986	1281870.002	1447140.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.771723986	1281780.002	1447110.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.756917	1281810.002	1447110.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.484795004	1281690.002	1446960.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.594008029	1281720.002	1446960.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.73021102	1281750.002	1446960.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.801784992	1281780.002	1446960.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.579521	1281810.002	1446960.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.899636984	1280820.002	1446930.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.89587301	1280850.002	1446930.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.891079009	1280880.002	1446930.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.659092009	1281690.002	1446930.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.89587301	1280820.002	1446900.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.897705972	1280850.002	1446900.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.893786013	1280880.002	1446900.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.891079009	1280850.002	1446870.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.31725201	1281720.002	1446840.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.801784992	1281750.002	1446840.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.122672997	1281690.002	1446810.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.753238022	1281720.002	1446810.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.715278983	1280880.002	1446750.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.715278983	1280910.002	1446750.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.710278988	1280910.002	1446720.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.767920017	1280940.002	1446720.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.787325025	1280970.002	1446720.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.863660991	1281000.002	1446720.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.825492978	1281000.002	1446690.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.861720026	1281030.002	1446690.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.833200991	1281090.002	1446690.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.775493026	1281090.002	1446660.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.858612001	1281120.002	1446660.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.861208975	1281150.002	1446660.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.858612001	1281150.002	1446630.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.855039001	1281180.002	1446630.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.86185497	1281180.002	1446600.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.417144001	1281690.002	1446600.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.849600017	1281720.002	1446600.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.853920996	1281210.002	1446570.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.661845982	1281630.002	1446570.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.346536994	1281660.002	1446570.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.741423011	1281690.002	1446570.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.737236977	1281720.002	1446570.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.836982012	1281750.002	1446570.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.709501982	1281180.002	1446540.005	276	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.73535502	1281660.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.733469009	1281690.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.73012501	1281720.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.733469009	1281750.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.838562012	1281780.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.838562012	1281810.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.803499997	1281840.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.837164998	1281870.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.825733006	1281900.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.822458982	1281930.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.817499995	1281960.002	1446540.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.708225012	1281150.002	1446510.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.698563993	1281750.002	1446510.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.846534014	1281780.002	1446510.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.830594003	1281810.002	1446510.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.820811987	1281900.002	1446510.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.744634986	1281930.002	1446510.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.714268982	1281090.002	1446480.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.704056025	1281120.002	1446480.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.633669019	1281480.002	1446450.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.699226022	1281060.002	1446420.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.633669019	1281480.002	1446420.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.639962018	1281480.002	1446390.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.674692988	1281510.002	1446390.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.726390004	1281480.002	1446360.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.763103008	1281510.002	1446360.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.726390004	1281450.002	1446330.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.642677009	1281480.002	1446330.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.763103008	1281510.002	1446330.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.499848008	1281480.002	1446300.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.727137983	1281510.002	1446300.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.381779999	1281510.002	1446270.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.739695013	1281510.002	1446210.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.64071703	1281510.002	1446180.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.597362995	1281510.002	1446150.005	276	2000	very high
NC	26982	Hexastylis naniflora	276	Dwarf-flowered Heartleaf	2016-06-20	2016-06-20	2007-08-10-Pre	Current	A	2-High	0.666849017	1281540.002	1446120.005	276	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.804561019	1289970.002	1510230.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.804561019	1290000.002	1510230.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.881107986	1289790.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.885755002	1289820.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.88380301	1289850.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.883083999	1289880.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.80193001	1289910.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.790713012	1289940.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.790713012	1289970.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.698839009	1290000.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.834834993	1290030.002	1510200.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.880617976	1289580.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.884657979	1289610.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.885986984	1289640.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.888621986	1289670.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.889231026	1289700.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.887920976	1289730.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.898299992	1289760.002	1510170.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.885986984	1289790.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.870003998	1289820.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.847374022	1289850.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium		1289880.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.69690299	1289910.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.74109	1289940.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.739215016	1289970.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.828410029	1290000.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.73733598	1290030.002	1510170.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.682187021	1289430.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.68186301	1289460.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.786216021	1289490.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.880617976	1289520.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.883943021	1289550.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.882601023	1289580.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.885277987	1289610.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.852912009	1289640.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.80252701	1289670.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.80252701	1289700.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.792870998	1289730.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.881973028	1289760.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.879254997	1289790.002	1510140.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.351823002	1289370.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.682187021	1289400.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.872318983	1289430.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.873722017	1289460.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.879254997	1289490.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.877147973	1289520.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.879415989	1289550.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.797048986	1289580.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.879254997	1289610.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.789774001	1289640.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.784074008	1289670.002	1510110.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.426358998	1289310.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.812727988	1289340.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.837817013	1289370.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.842522979	1289400.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.874373019	1289430.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.786552012	1289460.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.677631021	1289490.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.675768018	1289520.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.797048986	1289580.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.698132992	1289610.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.777374029	1289640.002	1510080.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.74793601	1289280.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.751648009	1289310.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.872556984	1289340.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.838551998	1289370.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.875533998	1289400.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.82814002	1289430.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.799085021	1289550.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.75898701	1289580.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.679521024	1289610.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.728806019	1290000.002	1510050.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.679494977	1290030.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.696186006	1290060.002	1510050.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.747013986	1289250.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.744284987	1289280.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.744284987	1289310.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.865487993	1289340.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.874373019	1289550.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.873722017	1289580.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.681905985	1289610.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.845772982	1289730.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.847312987	1289760.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.800808012	1289790.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.709712029	1289820.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.793572009	1289850.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.798780024	1289880.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.803937972	1289910.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.805646002	1289940.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.807348013	1289970.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.809044003	1290000.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.765623987	1290030.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.749742985	1290060.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.843711972	1290090.002	1510020.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.634518027	1289280.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.906675994	1289520.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.875764012	1289550.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.868061006	1289580.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.839273989	1289730.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.793572009	1289760.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.795313001	1289790.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.797048986	1289820.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.800504982	1289850.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.805646002	1289880.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.887309015	1289910.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.812418997	1289940.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.815769017	1289970.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.801132977	1290000.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.784771979	1290030.002	1509990.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.824783027	1289460.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.886213005	1289490.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.874373019	1289520.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.862273991	1289550.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.775884986	1289580.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.788314998	1289760.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.853003025	1289790.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.803021014	1289820.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.800504982	1289850.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.797048986	1289880.002	1509960.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.900694013	1289430.002	1509930.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.865182996	1289460.002	1509930.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.870908022	1289490.002	1509930.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.877304971	1289520.002	1509930.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.802461982	1289550.002	1509930.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.878709972	1289370.002	1509900.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.871806026	1289400.002	1509900.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.871806026	1289430.002	1509900.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.863732994	1289460.002	1509900.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.863732994	1289490.002	1509900.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.842418015	1289520.002	1509900.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.858551979	1289340.002	1509870.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.868982971	1289370.002	1509870.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.865487993	1289400.002	1509870.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.833334029	1289430.002	1509870.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.731867015	1289310.002	1509840.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.862720013	1289340.002	1509840.005	178	2000	very high
NC	28351	Hexastylis naniflora	282	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.862720013	1289370.002	1509840.005	178	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.785251975	1322460.002	1479270.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.769132972	1322490.002	1479270.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.792285979	1322430.002	1479240.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.748389006	1322460.002	1479240.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.578077972	1322490.002	1479240.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.797505021	1322400.002	1479210.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.750245988	1322430.002	1479210.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.797505021	1322370.002	1479180.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.753948987	1322400.002	1479180.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.806092978	1322340.002	1479150.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.790534973	1322370.002	1479150.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.826309025	1322310.002	1479120.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.824678004	1322340.002	1479120.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.781704009	1322550.002	1479120.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.835955977	1322280.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.786728978	1322310.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.735237002	1322340.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.717886984	1322370.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.719797015	1322400.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.766779006	1322430.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.794031024	1322460.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.750245988	1322490.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.69283098	1322520.002	1479090.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.837540984	1322250.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.725120008	1322280.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.697974026	1322310.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.690213025	1322340.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.682424009	1322400.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.678520024	1322430.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.678520024	1322460.002	1479060.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.831162989	1322250.002	1479030.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.71103102	1322280.002	1479030.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.802390993	1322250.002	1479000.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.78877902	1322700.002	1478850.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.454362005	1322730.002	1478850.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.449090004	1322760.002	1478850.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.247751996	1322790.002	1478850.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.800957024	1322640.002	1478820.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.795771003	1322670.002	1478820.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.541176021	1322700.002	1478820.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.529793024	1322730.002	1478820.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.803466976	1322640.002	1478790.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.546898007	1322670.002	1478790.005	302	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.624294996	1322010.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.628234029	1322040.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.745405018	1322070.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.745405018	1322100.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.743538022	1322130.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.628234029	1322160.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.611348987	1322220.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.615284026	1322250.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.795771003	1322640.002	1478760.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.734584987	1322100.002	1478730.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.732698023	1322130.002	1478730.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.742098987	1322220.002	1478730.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.745833993	1322250.002	1478730.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.679633975	1322430.002	1478700.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.681885004	1322610.002	1478700.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.800957024	1322700.002	1478700.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.545544028	1322760.002	1478700.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.539828002	1322790.002	1478700.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.816973984	1322610.002	1478670.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.807793021	1322640.002	1478670.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.76859498	1322670.002	1478670.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.753948987	1322700.002	1478670.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.683835983	1322610.002	1478640.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.800957024	1322640.002	1478640.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.766377985	1322280.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.745045006	1322310.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.737986028	1322340.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.736105025	1322370.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.745045006	1322400.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.817282975	1322430.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.835663974	1322610.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.835663974	1322640.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.834071994	1322670.002	1478400.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.717396021	1322280.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.702754974	1322310.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.730443001	1322340.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.512998998	1322370.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.722410977	1322400.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.796898007	1322430.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.826762974	1322460.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.847510993	1322490.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.845972002	1322520.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.844425976	1322550.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.83247298	1322580.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.827636003	1322610.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.83247298	1322640.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.830866992	1322670.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.834071994	1322700.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.84215802	1322730.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.830866992	1322760.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.829254985	1322790.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.754061997	1322820.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.746643007	1322850.002	1478370.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.712852001	1322430.002	1478340.005	302	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.714769006	1322460.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.73675698	1322490.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.788163006	1322520.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.791673005	1322550.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.835861027	1322580.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.832670987	1322610.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.732988	1322640.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.732988	1322670.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.779298007	1322700.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.816120028	1322730.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.815223992	1322760.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.818552017	1322790.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.738156974	1322820.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.737285018	1322850.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.653253973	1322880.002	1478340.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.723510027	1322520.002	1478310.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.74634701	1322580.002	1478310.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.80400002	1322610.002	1478310.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.69225198	1322640.002	1478310.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.694639027	1322850.002	1478310.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.64735198	1322880.002	1478310.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.789920986	1322610.002	1478280.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.782859027	1322640.002	1478280.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.77392	1322610.002	1478250.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.807707012	1322640.002	1478250.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.721605003	1322670.002	1478250.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.792196989	1322640.002	1478220.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.79914701	1322670.002	1478220.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.713958025	1322700.002	1478220.005	302	2000	very high
NC	24218	Hexastylis naniflora	262	Dwarf-flowered Heartleaf	2016-05-05	2016-05-05	2000-04-05	Current	Ar	2-High	0.788689971	1322700.002	1478190.005	302	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.82287699	1286190.002	1450080.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.80913502	1286220.002	1450080.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.854628026	1286190.002	1450050.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.769210994	1286220.002	1450050.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.822223008	1286190.002	1450020.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.774520993	1286220.002	1450020.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.855503023	1286160.002	1449990.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.788591981	1286190.002	1449990.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.851598978	1286220.002	1449990.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.809834003	1286250.002	1449990.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.83484602	1286160.002	1449960.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.820439994	1286190.002	1449960.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.801451027	1286220.002	1449960.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.787527025	1286250.002	1449960.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.827763021	1286160.002	1449930.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.813678026	1286190.002	1449930.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.783378005	1286220.002	1449930.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.685283005	1286250.002	1449930.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.848537982	1286130.002	1449900.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.808363974	1286160.002	1449900.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.792182982	1286190.002	1449900.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.691120982	1286220.002	1449900.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.839815974	1286070.002	1449870.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.790750027	1286100.002	1449870.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.808018982	1286130.002	1449870.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.793928981	1286160.002	1449870.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.779438972	1286190.002	1449870.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.846704006	1286010.002	1449840.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.853305995	1286040.002	1449840.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.787030995	1286070.002	1449840.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.769491017	1286100.002	1449840.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.863964021	1286280.002	1449840.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.862506986	1286310.002	1449840.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.864058018	1286010.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.83424902	1286040.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.787838995	1286070.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.768287003	1286100.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.878687978	1286250.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.876259029	1286280.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.870658994	1286310.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.861042023	1286340.002	1449810.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.839815974	1285980.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.85946101	1286010.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.86077702	1286040.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.761350989	1286070.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.772091985	1286100.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.815694988	1286130.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.892076015	1286160.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.891245008	1286190.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.881394029	1286220.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.87867099	1286250.002	1449780.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.859915972	1286010.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.807309985	1286040.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.767255008	1286070.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.771785975	1286100.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.86243999	1286130.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.884886026	1286160.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.891245008	1286190.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.836951971	1286220.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.78816998	1286250.002	1449750.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.84166801	1286040.002	1449720.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.752456009	1286070.002	1449720.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.729169011	1286100.002	1449720.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.772890985	1286130.002	1449720.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.791577995	1286160.002	1449720.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.784640014	1286190.002	1449720.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.739495993	1286040.002	1449690.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.785157025	1286070.002	1449690.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.772890985	1286100.002	1449690.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.722121	1286040.002	1449660.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.797828972	1286070.002	1449660.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.785166979	1286010.002	1449630.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.803445995	1286040.002	1449630.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.769698024	1286070.002	1449630.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.804513991	1286010.002	1449600.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.797828972	1286040.002	1449600.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.767080009	1286070.002	1449600.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.756241024	1285950.002	1449570.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.863566995	1285980.002	1449570.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.842595994	1286010.002	1449570.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.73674798	1285830.002	1449540.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.813983023	1285860.002	1449540.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.758394003	1285890.002	1449540.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.793502986	1285920.002	1449540.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.847893	1285950.002	1449540.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.84859103	1285980.002	1449540.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.798660994	1285770.002	1449510.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.878602028	1285800.002	1449510.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.887538016	1285830.002	1449510.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.890035987	1285860.002	1449510.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.819019973	1285890.002	1449510.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.822308004	1285920.002	1449510.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.784752011	1285710.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.848686993	1285740.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.867341995	1285770.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.891650021	1285800.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.823397994	1285830.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.814146996	1285860.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.708324015	1285890.002	1449480.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.802986026	1285650.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.85946101	1285680.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.894500017	1285710.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.866075993	1285740.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.735099018	1285770.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.727750003	1285800.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.722483993	1285830.002	1449450.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.600648999	1285560.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.638953984	1285590.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.652927995	1285620.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.799290001	1285650.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.839567006	1285680.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.752399027	1285710.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.748920977	1285740.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.727750003	1285770.002	1449420.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.600648999	1285530.002	1449390.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.659123003	1285560.002	1449390.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.789946973	1285590.002	1449390.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.638953984	1285500.002	1449360.005	100	2000	very high
NC	13149	Hexastylis naniflora	73	Dwarf-flowered Heartleaf	2012-04-11	2012-04-11	2001-03-06	Current	A	2-High	0.839815974	1285530.002	1449360.005	100	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.769155025	1332120.002	1507650.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.77304399	1332150.002	1507650.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.77304399	1332180.002	1507650.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.77304399	1332210.002	1507650.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.767341018	1332030.002	1507620.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.777469993	1332060.002	1507620.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.77304399	1332090.002	1507620.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.771239996	1332120.002	1507620.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.765522003	1332150.002	1507620.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.765522003	1331970.002	1507590.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.771239996	1332000.002	1507590.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.771239996	1332030.002	1507590.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.763698995	1332060.002	1507590.005	96	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.734363973	1332090.002	1507590.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.678138971	1332120.002	1507590.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.663296998	1332150.002	1507590.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.768184006	1331910.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.769430995	1331940.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.718389988	1331970.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.721153975	1332000.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.728691995	1332030.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.638383985	1332060.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.659823	1332090.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.655439019	1332120.002	1507560.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.768145025	1331880.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.718389988	1331910.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.687811017	1331940.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.697440982	1331970.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.691622019	1332000.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.62391299	1332030.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.653927028	1332060.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.655893028	1332090.002	1507530.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.734363973	1331880.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.772046983	1331910.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.642323017	1331940.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.62588203	1331970.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.619974017	1332000.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.618005991	1332030.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.616037011	1332060.002	1507500.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.739001989	1331880.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.776480019	1331910.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.760039985	1331940.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.642323017	1331970.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.642323017	1332000.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.640353978	1332030.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.641463995	1332060.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.727853	1332090.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.734816015	1332360.002	1507470.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.770172	1331850.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.682044029	1331880.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.730585992	1331910.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.770271003	1331940.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.727853	1331970.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.769430995	1332000.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.770271003	1332030.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.72873503	1332060.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.763698995	1332090.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.751637995	1332120.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.64605701	1332150.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.634240985	1332300.002	1507440.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.740454972	1331760.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.740454972	1331790.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.766543984	1331820.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.672271013	1331850.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.64605701	1331880.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.615583003	1331910.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.76187098	1331940.002	1507410.005	96	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.76187098	1331970.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.727853	1332000.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.76187098	1332030.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.770271003	1332060.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.76454699	1332090.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.749783993	1332120.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.640150011	1332150.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.65854001	1332240.002	1507410.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.186132997	1332295.953	1507578.747	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.650665998	1331730.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.654609025	1331850.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.602275014	1331880.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.643634021	1331910.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.672271013	1331940.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.732367992	1331970.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.728583992	1332000.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.671413004	1332030.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.767616987	1332060.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.771178007	1332090.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.65854001	1332120.002	1507380.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.668353021	1331970.002	1507350.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.684229016	1332000.002	1507350.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.72775197	1332030.002	1507350.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.765798986	1332060.002	1507350.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.762679994	1332090.002	1507350.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.662468016	1332120.002	1507350.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.140498996	1331970.002	1507320.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.676183999	1332000.002	1507320.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.770271003	1332030.002	1507320.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.725955009	1332060.002	1507320.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.670313001	1332090.002	1507320.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.174783006	1331970.002	1507290.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.764505982	1332000.002	1507290.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.771079004	1332030.002	1507290.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.720978975	1332060.002	1507290.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.343769014	1331970.002	1507260.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.772046983	1332000.002	1507260.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.771979988	1332030.002	1507260.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.719070017	1332060.002	1507260.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.345250994	1332000.002	1507230.005	96	2000	very high
NC	21920	Hexastylis naniflora	184	Dwarf-flowered Heartleaf	2013-10-30	2013-10-30	1994-05-11	Current	A	3-Medium	0.753489017	1332030.002	1507230.005	96	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.752397001	1289850.002	1511520.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.735601008	1289880.002	1511520.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.743102014	1289730.002	1511490.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.74496901	1289760.002	1511490.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.744539022	1289790.002	1511490.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.703984022	1289820.002	1511490.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.720795989	1289730.002	1511460.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.731387019	1289760.002	1511460.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.750617027	1289100.002	1511400.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.823327005	1289520.002	1511400.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.724249005	1289550.002	1511400.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.736455023	1289070.002	1511370.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.836610973	1289100.002	1511370.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.823327005	1289490.002	1511370.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.727599025	1289520.002	1511370.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.904148996	1289610.002	1511370.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.889210999	1289040.002	1511340.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.72933799	1289070.002	1511340.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.725106001	1289100.002	1511340.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.829503	1289460.002	1511340.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.729494989	1289490.002	1511340.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.91051501	1289010.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.74316901	1289040.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.721297979	1289070.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.848546028	1289310.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.758686006	1289430.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.73327601	1289460.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.762878001	1289490.002	1511310.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.84463799	1288980.002	1511280.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.797622979	1289010.002	1511280.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.74129802	1289040.002	1511280.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.78135699	1289460.002	1511280.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.819471002	1288980.002	1511250.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.868532002	1289010.002	1511250.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.871372998	1288980.002	1511220.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.896773994	1289610.002	1511220.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.785372019	1288980.002	1511190.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.883755982	1288860.002	1511130.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.826687992	1288890.002	1511130.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.700873971	1288920.002	1511130.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.807967007	1289550.002	1511130.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.812345028	1288830.002	1511100.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.900834024	1288860.002	1511100.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.788899004	1288890.002	1511100.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.705850005	1288920.002	1511100.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.773102999	1288950.002	1511100.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.802850008	1289550.002	1511100.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.915349007	1288830.002	1511070.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.86421299	1288860.002	1511070.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.720495999	1288890.002	1511070.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.677541971	1288920.002	1511070.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.758540988	1288950.002	1511070.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.914225996	1288590.002	1511040.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.881651998	1288830.002	1511040.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.803300977	1288860.002	1511040.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.694804013	1288890.002	1511040.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.855895996	1288590.002	1511010.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.828642011	1288620.002	1511010.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.880294979	1288830.002	1511010.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.819094002	1288860.002	1511010.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.690473974	1288890.002	1511010.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.922064006	1288560.002	1510980.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.846563995	1288590.002	1510980.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.795243025	1288620.002	1510980.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.825668991	1288860.002	1510980.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.709001005	1288890.002	1510980.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.805646002	1289430.002	1510980.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.922555983	1288530.002	1510950.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.916463971	1288560.002	1510950.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.849628985	1288590.002	1510950.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.906114995	1288620.002	1510950.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.903719008	1288860.002	1510950.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.765623987	1288890.002	1510950.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.920257986	1288500.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.884338975	1288530.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.85115099	1288560.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.849628985	1288590.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.880207002	1288620.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.898159027	1288890.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.766299009	1289460.002	1510920.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.917734981	1288500.002	1510890.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.854079008	1288530.002	1510890.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.805572987	1288560.002	1510890.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.845404983	1288590.002	1510890.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.878841996	1288620.002	1510890.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.918667018	1288470.002	1510860.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.918829978	1288500.002	1510860.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.808970988	1288530.002	1510860.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.785476983	1288560.002	1510860.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.822555006	1288590.002	1510860.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.922064006	1288470.002	1510830.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.913092971	1288500.002	1510830.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.803866029	1288530.002	1510830.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.876505017	1289340.002	1510830.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.917734981	1288500.002	1510800.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.881973028	1289310.002	1510800.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.855895996	1288500.002	1510770.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.158366993	1290780.002	1509180.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.814292014	1290810.002	1509180.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.753942013	1290840.002	1509180.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.691192985	1290870.002	1509180.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.668308973	1290900.002	1509180.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.768419981	1290930.002	1509180.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.167010993	1290780.002	1509150.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.46094799	1290810.002	1509150.005	178	2000	very high
NC	36661	Hexastylis naniflora	310	Dwarf-flowered Heartleaf	2016-04-05	2016-04-05	2016-04-05	Current	A	1-Very High	0.44937399	1290840.002	1509150.005	178	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.778342009	1265490.002	1445670.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.809352994	1265520.002	1445670.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.728855014	1265310.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.81723398	1265340.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.776763976	1265370.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.864109993	1265400.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.860399008	1265430.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.850642025	1265460.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.812725008	1265490.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.799493015	1265520.002	1445640.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.813894987	1265340.002	1445610.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.767741978	1265370.002	1445610.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.864109993	1265400.002	1445610.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.866361976	1265430.002	1445610.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.889388025	1265460.002	1445610.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.799094975	1265490.002	1445610.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.737522006	1265520.002	1445610.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.743117988	1265340.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.820547998	1265370.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.852334976	1265400.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.86273998	1265430.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.882763028	1265460.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.661702991	1265490.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.728083014	1265520.002	1445580.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.711941004	1265340.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.735004008	1265370.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.779253006	1265400.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.789876997	1265430.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.816031992	1265460.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.657774985	1265490.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.674786985	1265520.002	1445550.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.706170976	1265340.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.72744	1265370.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.795283973	1265400.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.837354004	1265430.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.814360976	1265460.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.614400029	1265490.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.670871973	1265520.002	1445520.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.717917979	1265370.002	1445490.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.736886024	1265400.002	1445490.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.829361022	1265430.002	1445490.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.760529995	1265460.002	1445490.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.595584989	1265490.002	1445490.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.71408999	1265370.002	1445460.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.729336023	1265400.002	1445460.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.827741981	1265430.002	1445460.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.75869602	1265460.002	1445460.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.591665983	1265490.002	1445460.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.580386996	1265520.002	1445460.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.71408999	1265370.002	1445430.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.731227994	1265400.002	1445430.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.821201026	1265430.002	1445430.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.75869602	1265460.002	1445430.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.659982026	1265490.002	1445430.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.578436971	1265520.002	1445430.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.576973021	1265370.002	1445400.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.779421985	1265400.002	1445400.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.819549978	1265430.002	1445400.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.75869602	1265460.002	1445400.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.751314998	1265490.002	1445400.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.577987015	1265520.002	1445400.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.555419981	1265370.002	1445370.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.707526982	1265400.002	1445370.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.751600027	1265430.002	1445370.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.685359001	1265460.002	1445370.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.689252019	1265490.002	1445370.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.574407995	1265520.002	1445370.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.56169498	1265370.002	1445340.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.70174098	1265400.002	1445340.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.74602598	1265430.002	1445340.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.740417004	1265460.002	1445340.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.685359001	1265490.002	1445340.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.612187982	1265520.002	1445340.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.587859988	1265550.002	1445340.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.559759974	1265370.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.684032977	1265400.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.734777987	1265430.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.734777987	1265460.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.738541007	1265490.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.616123021	1265520.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.589816988	1265550.002	1445310.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.620689988	1265400.002	1445280.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.70786202	1265430.002	1445280.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.711706996	1265460.002	1445280.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.729107976	1265490.002	1445280.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.656701028	1265520.002	1445280.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.612819016	1265550.002	1445280.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.608887017	1265430.002	1445250.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.668392003	1265460.002	1445250.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.65080303	1265490.002	1445250.005	99	2000	very high
NC	21834	Hexastylis naniflora	182	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	1996	Current	A?	3-Medium	0.644900024	1265520.002	1445250.005	99	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.780788004	1302540.002	1495590.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.644644022	1302570.002	1495590.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.77362299	1302510.002	1495560.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.660848022	1302540.002	1495560.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.684328973	1302570.002	1495560.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.671688974	1302600.002	1495560.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.77680099	1302480.002	1495530.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.668241978	1302510.002	1495530.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.651032984	1302540.002	1495530.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.737559021	1302570.002	1495530.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.763808012	1302450.002	1495500.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.712859988	1302480.002	1495500.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.687263012	1302510.002	1495500.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.728120029	1302540.002	1495500.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.746914029	1302570.002	1495500.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.839749992	1302420.002	1495470.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.85659802	1302450.002	1495470.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.762216985	1302480.002	1495470.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.730014026	1302510.002	1495470.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.72241801	1302540.002	1495470.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.626186013	1302570.002	1495470.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.844431996	1302390.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.860248983	1302420.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.861037016	1302450.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.828095973	1302480.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.70974201	1302510.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.587737978	1302540.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.630033016	1302570.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.655623972	1302600.002	1495440.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.845149994	1302360.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.852091014	1302390.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.85659802	1302420.002	1495410.005	243	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.760922015	1302450.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.710183978	1302480.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.700546026	1302510.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.607248008	1302570.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.65169102	1302600.002	1495410.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.802707016	1302270.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.833410025	1302300.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.839749992	1302330.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.850573003	1302360.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.855103016	1302390.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.771072984	1302420.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.708185971	1302450.002	1495380.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.669408023	1302180.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.796176016	1302210.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.801357985	1302240.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.836593986	1302270.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.809976995	1302300.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.821654975	1302330.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.849048972	1302360.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.814924002	1302390.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.707741976	1302420.002	1495350.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.821654975	1302330.002	1495320.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.847517014	1302360.002	1495320.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.760149002	1302390.002	1495320.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.833410025	1302300.002	1495290.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.850754976	1302330.002	1495290.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.838174999	1302360.002	1495290.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.750928998	1302390.002	1495290.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.844617009	1302300.002	1495260.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.803171992	1302330.002	1495260.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.811773002	1302360.002	1495260.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.833410025	1302390.002	1495260.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.841503978	1302300.002	1495230.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.831807971	1302330.002	1495230.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.797909021	1302360.002	1495230.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.841503978	1302390.002	1495230.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.838364005	1302300.002	1495200.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.825331986	1302330.002	1495200.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.841503978	1302300.002	1495170.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.831999004	1302270.002	1495140.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.838364005	1302300.002	1495140.005	243	2000	very high
NC	10553	Hexastylis naniflora	12	Dwarf-flowered Heartleaf	1995	1995	1981-05	Current	A	2-High	0.837512016	1302270.002	1495110.005	243	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.851296008	1288860.002	1510200.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.852810025	1288800.002	1510170.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.811833024	1288830.002	1510170.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.858790994	1288770.002	1510140.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.852810025	1288800.002	1510140.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.789737999	1288740.002	1510110.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.861737013	1288770.002	1510110.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.864651024	1288710.002	1510080.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.867533982	1288740.002	1510080.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.855816007	1288770.002	1510080.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.825618029	1288860.002	1510080.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.851296008	1288890.002	1510080.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.590713024	1288680.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.871800005	1288710.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.868202984	1288740.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.863197982	1288770.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.860267997	1288800.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.860267997	1288830.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.854317009	1288860.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.848245978	1288890.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.845166981	1288920.002	1510050.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.887309015	1288650.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.884657979	1288680.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.864651024	1288710.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.855816007	1288740.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.855816007	1288770.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.852810025	1288800.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.852810025	1288830.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.851296008	1288860.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.775426984	1288890.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.722729981	1288920.002	1510020.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.89251101	1288620.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.864748001	1288650.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.792870998	1288680.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.767255008	1288710.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.754507005	1288740.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.706966996	1288770.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.70373702	1288800.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.763091981	1288830.002	1509990.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.885986984	1288620.002	1509960.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.796352983	1288650.002	1509960.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.767255008	1288680.002	1509960.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.752745986	1288710.002	1509960.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.812713981	1288620.002	1509930.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.770879984	1288650.002	1509930.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.682107985	1289070.002	1509780.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.68395102	1289100.002	1509780.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.721009016	1289040.002	1509750.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.721009016	1289070.002	1509750.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.713766992	1289100.002	1509750.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.674803972	1289130.002	1509750.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.711974978	1289160.002	1509750.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.711974978	1289190.002	1509750.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.746089995	1289040.002	1509720.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.742504001	1289070.002	1509720.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.836356997	1289100.002	1509720.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.653006971	1289130.002	1509720.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.621401012	1289160.002	1509720.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.869728982	1289040.002	1509690.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.777574003	1289070.002	1509690.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.755586028	1289100.002	1509690.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.605301976	1289130.002	1509690.005	178	2000	very high
NC	28352	Hexastylis naniflora	283	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.601710975	1289160.002	1509690.005	178	2000	very high
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.74289602	1308180.002	1455270.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.768748999	1308210.002	1455270.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.628372014	1308240.002	1455270.005	208	99	low

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.732724011	1308270.002	1455270.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.327607989	1308240.002	1455240.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.329665989	1308270.002	1455240.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.816127002	1308300.002	1455240.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.723523974	1308330.002	1455240.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.723523974	1308360.002	1455240.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.818331003	1308330.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.84899801	1308360.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.836447001	1308390.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.808045983	1308420.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.806921005	1308450.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.816127002	1308480.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.851230025	1308510.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.725135028	1308540.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.721386015	1308570.002	1455210.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.318378001	1308240.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.322593987	1308270.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.325428009	1308300.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.756340981	1308390.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.766337991	1308420.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.802332997	1308450.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.813910007	1308480.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.841916978	1308510.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.721109986	1308540.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.713437021	1308570.002	1455180.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.315589994	1308210.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.318378001	1308240.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.319777995	1308270.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.325103998	1308300.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.725135028	1308330.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.326444	1308420.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.736899018	1308450.002	1455150.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.318378001	1308240.002	1455120.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.729349017	1308270.002	1455120.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.375634015	1308300.002	1455120.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.334547013	1308420.002	1455120.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.721749008	1308510.002	1455060.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.705137014	1308540.002	1455060.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.629781008	1308570.002	1455060.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.723712027	1308600.002	1455060.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.708638012	1308630.002	1455060.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.325922996	1308450.002	1455030.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.724089026	1308480.002	1455030.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.717931986	1308510.002	1455030.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.719842017	1308540.002	1455030.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.725555003	1308570.002	1455030.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.710264981	1308540.002	1455000.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.703001976	1308510.002	1454970.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.699136019	1308540.002	1454970.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.706857979	1308570.002	1454970.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.697201014	1308510.002	1454940.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.224649996	1308540.002	1454940.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.228909001	1308570.002	1454940.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.558036029	1308510.002	1454910.005	208	99	low

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.204905003	1308540.002	1454910.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.204905003	1308570.002	1454910.005	208	99	low
NC	22219	Hexastylis naniflora	208	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1998-2000	Current	A	3-Medium	0.563840985	1308540.002	1454880.005	208	99	low
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.826209009	1287750.002	1448310.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.83069098	1287750.002	1448280.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.890917003	1287750.002	1448250.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.840413988	1287780.002	1448250.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.827414989	1287870.002	1448250.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.823334992	1287900.002	1448250.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.889856994	1287750.002	1448220.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.88815099	1287780.002	1448220.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.876327991	1287810.002	1448220.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.877246022	1287840.002	1448220.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.876327991	1287870.002	1448220.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.82169199	1287900.002	1448220.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.879068971	1287720.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.846306026	1287750.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.795123994	1287780.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.793700993	1287810.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.791148007	1287840.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.727657974	1287870.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.701541007	1287900.002	1448190.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.886497974	1287690.002	1448160.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.869018018	1287720.002	1448160.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.693629026	1287750.002	1448160.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.689742982	1287780.002	1448160.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.631407022	1287810.002	1448160.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.608501971	1287840.002	1448160.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.881744981	1287690.002	1448130.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.789812982	1287720.002	1448130.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.671046972	1287750.002	1448130.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.606653988	1287780.002	1448130.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.685180008	1287810.002	1448130.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.874692976	1287660.002	1448100.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.76612401	1287690.002	1448100.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.875865996	1288290.002	1448010.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.72082001	1288260.002	1447980.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.864877999	1288410.002	1447980.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.863915026	1288440.002	1447980.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.843666971	1288350.002	1447950.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.778822005	1288380.002	1447950.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.770069003	1288410.002	1447950.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.699437976	1288440.002	1447950.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.784280002	1288320.002	1447920.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.780008018	1288350.002	1447920.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.820042014	1288560.002	1447890.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.815056026	1288590.002	1447890.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.83069098	1288500.002	1447860.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.739322007	1288530.002	1447860.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.733676016	1288560.002	1447860.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.625496984	1288590.002	1447860.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.692960024	1288620.002	1447860.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.661315024	1288380.002	1447740.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.809544027	1288410.002	1447740.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.712988019	1288380.002	1447650.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.739655972	1288380.002	1447530.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.660540998	1288380.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.761777997	1288410.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.749238014	1288440.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.772023022	1288470.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.718904972	1288500.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.824322999	1288530.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.781584978	1288650.002	1447440.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.638025999	1288410.002	1447410.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.663133979	1288440.002	1447410.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.813157976	1288620.002	1447410.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.780496001	1288650.002	1447410.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.755091012	1288590.002	1447380.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.733421028	1288620.002	1447380.005	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.708190978	1288316.727	1447836.831	100	2000	very high
NC	22381	Hexastylis naniflora	233	Dwarf-flowered Heartleaf	2012-04-01	2012-04-01	2001	Current	A	2-High	0.743613005	1288320.584	1447847.387	100	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.782306015	1264830.002	1445700.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.816459	1264860.002	1445700.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.773289025	1264890.002	1445700.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.78490901	1264860.002	1445670.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.838177025	1264890.002	1445670.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.782306015	1264860.002	1445640.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.818661988	1264890.002	1445640.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.780085027	1264860.002	1445610.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.818661988	1264890.002	1445610.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.780085027	1264860.002	1445580.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.822170019	1264890.002	1445580.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.85926801	1264920.002	1445580.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.872972012	1264860.002	1445550.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.822170019	1264890.002	1445550.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.827782989	1264920.002	1445550.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.819968998	1264860.002	1445520.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.818661988	1264890.002	1445520.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.800884008	1264920.002	1445520.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.818906009	1264860.002	1445490.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.742222011	1264890.002	1445490.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.731877029	1264920.002	1445490.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.750769019	1264950.002	1445490.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.75120002	1264890.002	1445460.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.733765006	1264920.002	1445460.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.754469991	1264950.002	1445460.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.748480022	1264890.002	1445430.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.743570983	1264920.002	1445430.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.783976972	1264950.002	1445430.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.689490974	1264980.002	1445430.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.795117974	1264890.002	1445400.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.74495697	1264920.002	1445400.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.731877029	1264950.002	1445400.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.747053027	1264980.002	1445400.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.701210976	1264920.002	1445370.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.747498989	1264950.002	1445370.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.726193011	1264980.002	1445370.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.629882991	1265010.002	1445370.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.69709003	1264950.002	1445340.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.729984999	1264980.002	1445340.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.68712002	1265010.002	1445340.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.744771004	1264980.002	1445310.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.707952023	1265010.002	1445310.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.629882991	1265040.002	1445310.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.736522019	1264980.002	1445280.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.801177025	1265010.002	1445280.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.707952023	1265040.002	1445280.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.742222011	1265040.002	1445250.005	99	2000	very high
NC	17372	Hexastylis naniflora	9	Dwarf-flowered Heartleaf	2012	2005-03-05	1981	Current	AB	2-High	0.631852984	1265070.002	1445250.005	99	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.060871199	1313220.002	1508070.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.406040013	1313220.002	1508040.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.665190995	1313250.002	1508040.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.587451994	1313100.002	1507920.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.655324996	1313130.002	1507920.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.453453004	1313160.002	1507920.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.426167011	1313070.002	1507890.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.444671005	1313100.002	1507890.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.597941995	1313130.002	1507890.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.438450992	1313160.002	1507890.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.637611985	1313100.002	1507860.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.645488024	1313130.002	1507860.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.740687013	1314810.002	1507860.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.814885974	1314780.002	1507830.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.733162999	1314810.002	1507830.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.406203985	1313790.002	1507650.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.701680005	1313820.002	1507650.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.407862991	1313850.002	1507650.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.189186007	1313760.002	1507620.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.645588994	1313790.002	1507620.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.603830993	1313820.002	1507620.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.607761025	1313850.002	1507620.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.404547989	1313880.002	1507620.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.166943997	1313760.002	1507590.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.57920301	1313790.002	1507590.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.595981002	1313820.002	1507590.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.597941995	1313850.002	1507590.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.696559012	1313880.002	1507590.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.698494017	1313910.002	1507590.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.193252996	1313730.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.590103984	1313760.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.592061996	1313790.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.690741003	1313820.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.690741003	1313850.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.744503975	1313880.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.744503975	1313910.002	1507560.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.737013996	1313760.002	1507530.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.686852992	1313790.002	1507530.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.772575974	1313820.002	1507530.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.774375021	1313850.002	1507530.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.742636979	1313880.002	1507530.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.68879801	1313910.002	1507530.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.733247995	1313760.002	1507500.005	31	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.682958007	1313790.002	1507500.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.735131979	1313820.002	1507500.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.737013996	1313850.002	1507500.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.738892019	1313880.002	1507500.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.733247995	1313790.002	1507470.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.735131979	1313820.002	1507470.005	31	2000	very high
NC	20023	Hexastylis naniflora	31	Dwarf-flowered Heartleaf	2010-12-21	2010-12-21	1995-05-04	Current	C?	3-Medium	0.682958007	1313850.002	1507470.005	31	2000	very high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.192938	1311930.002	1516770.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.682869971	1311780.002	1516740.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.682869971	1311810.002	1516740.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.671370029	1311840.002	1516740.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.387598991	1311870.002	1516740.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.373957008	1311900.002	1516740.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.202722996	1311930.002	1516740.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.690638006	1311780.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.679192007	1311810.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.675284028	1311840.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.370539993	1311870.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.378681988	1311900.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.394057989	1311930.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.761690021	1311960.002	1516710.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.683094978	1311780.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.685045004	1311810.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.388889998	1311840.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.395684004	1311870.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.388889998	1311900.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.654009998	1311930.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.667670012	1311960.002	1516680.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.897176981	1311660.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.77452898	1311780.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.772728026	1311810.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.739027023	1311840.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.473641008	1311870.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.823683023	1311900.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.714652002	1311930.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.758377016	1311960.002	1516650.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.782513022	1311690.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.897773981	1311720.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.789578021	1311750.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.783459008	1311780.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.893382013	1311810.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.858493984	1311840.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.858493984	1311870.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.857008994	1311900.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.799844027	1311930.002	1516620.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.818888009	1311720.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.899819016	1311750.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.896521986	1311780.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.89526099	1311810.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.893990993	1311840.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.893990993	1311870.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.892099977	1311900.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.798117995	1311930.002	1516590.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.308672994	1311750.002	1516560.005	316	1000	high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.314162999	1311780.002	1516560.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.862828016	1311810.002	1516560.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.868780971	1311840.002	1516560.005	316	1000	high
NC	25718	Hexastylis naniflora	273	Dwarf-flowered Heartleaf	2006-09	2006-09	2006-09	Current	C	2-High	0.300574988	1311780.002	1516530.005	316	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.717794001	1303080.002	1466220.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.791863024	1303110.002	1466220.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.786590993	1303140.002	1466220.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.788353026	1303170.002	1466220.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.678716004	1303200.002	1466220.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.759554029	1303230.002	1466220.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.827216983	1303050.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.787424028	1303080.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.841926992	1303110.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.841926992	1303140.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.841926992	1303170.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.859102011	1303200.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.857618988	1303230.002	1466190.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.798184991	1303050.002	1466160.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.789183974	1303080.002	1466160.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.848116994	1303110.002	1466160.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.84503597	1303140.002	1466160.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.837211013	1303170.002	1466160.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.830825984	1303200.002	1466160.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.799911022	1303050.002	1466130.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.792971015	1303080.002	1466130.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.843484998	1303110.002	1466130.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.749357998	1303050.002	1466100.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.848116994	1303080.002	1466100.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.843484998	1303110.002	1466100.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.832431972	1303140.002	1466100.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.659741998	1303050.002	1466070.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.710559011	1303080.002	1466070.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.793609977	1303110.002	1466070.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.784823	1303140.002	1466070.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.712585986	1303020.002	1466040.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.718225002	1303050.002	1466040.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.697498024	1303080.002	1466040.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.687789023	1303110.002	1466040.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.667894006	1303020.002	1466010.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.730732977	1303050.002	1466010.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.704783022	1303080.002	1466010.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.689734995	1303110.002	1466010.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.667894006	1303020.002	1465980.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.647938013	1303050.002	1465980.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.708635986	1303080.002	1465980.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.698987007	1303110.002	1465980.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.259851009	1303050.002	1465950.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.780736983	1303080.002	1465950.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.723142028	1303110.002	1465950.005	232	1000	high
NC	16646	Hexastylis naniflora	46	Dwarf-flowered Heartleaf	2005-11-15	2005-11-15	1998-05-18	Current	A	3-Medium	0.713586986	1303140.002	1465950.005	232	1000	high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.744305015	1285530.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.775135994	1285560.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.790983975	1285590.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.787301004	1285620.002	1449180.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.790983975	1285650.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.789502025	1285680.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.784004986	1285710.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.786967993	1285740.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.765749991	1285770.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.722073972	1285800.002	1449180.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.597774029	1285470.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.66999799	1285500.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.800153971	1285530.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.799851	1285560.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.794191003	1285590.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.762484014	1285770.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.781705022	1285800.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.777493	1285830.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.731326997	1285860.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.715946019	1285890.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.76838702	1285920.002	1449150.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.564037979	1285440.002	1449120.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.693428993	1285470.002	1449120.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.769499004	1285500.002	1449120.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.800927997	1285530.002	1449120.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.888337016	1285800.002	1449120.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.782274008	1285830.002	1449120.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.729906976	1285440.002	1449090.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.788402975	1285470.002	1449090.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.780259013	1285500.002	1449090.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.823225975	1285290.002	1449060.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.768508017	1285320.002	1449060.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.799736023	1285440.002	1449060.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.744750977	1285470.002	1449060.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.748462021	1285290.002	1449030.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.800813019	1285320.002	1449030.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.855279982	1285350.002	1449030.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.836088002	1285410.002	1449030.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.763002992	1285440.002	1449030.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.739280999	1285470.002	1449030.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.80973202	1285350.002	1449000.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.836088002	1285380.002	1449000.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.840030015	1285410.002	1449000.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.758171976	1285440.002	1449000.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.859597981	1285350.002	1448970.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.836983979	1285380.002	1448970.005	100	2000	very high
NC	18850	Hexastylis naniflora	14	Dwarf-flowered Heartleaf	2009-06	2009-06	1981-05	Current	C?	3-Medium	0.755725026	1285410.002	1448970.005	100	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.641695023	1294020.002	1460490.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.506281018	1294050.002	1460490.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.796772003	1293990.002	1460460.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.400456011	1294020.002	1460460.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.535145998	1294050.002	1460460.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.784291029	1293990.002	1460430.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.730153024	1294020.002	1460430.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.535145998	1294050.002	1460430.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.496989012	1294080.002	1460430.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.714397013	1293990.002	1460400.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.724476993	1294020.002	1460400.005	217	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.726607978	1294050.002	1460400.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.720901012	1294080.002	1460400.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.708635986	1293990.002	1460370.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.382652014	1294020.002	1460370.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.639724016	1294050.002	1460370.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.718774021	1294080.002	1460370.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.602820992	1294020.002	1460340.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.64558202	1294050.002	1460340.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.71686703	1294080.002	1460340.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.669193029	1294020.002	1460310.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.703419983	1294050.002	1460310.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.704439998	1294080.002	1460310.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.663417995	1294020.002	1460280.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.682837009	1294050.002	1460280.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.692008972	1294080.002	1460280.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.659491003	1294020.002	1460250.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.677128017	1294050.002	1460250.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.607607007	1294080.002	1460250.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.663326979	1294020.002	1460220.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.676998019	1294050.002	1460220.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.667340994	1294080.002	1460220.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.568452001	1293990.002	1460190.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.341793001	1294020.002	1460190.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.673216999	1294050.002	1460190.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.277545005	1294080.002	1460190.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.277036995	1293990.002	1460160.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.465427995	1294020.002	1460160.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.671258986	1294050.002	1460160.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.565813005	1294080.002	1460160.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.668251991	1294020.002	1460130.005	217	2000	very high
NC	22198	Hexastylis naniflora	191	Dwarf-flowered Heartleaf	2013-06-03	2014	1998-2000	Current	D	3-Medium	0.665380001	1294050.002	1460130.005	217	2000	very high
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.740840018	1309530.002	1505130.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.235293001	1309530.002	1505100.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.240832001	1309560.002	1505100.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.745456994	1309590.002	1505100.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.235293001	1309560.002	1505070.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.768094003	1309590.002	1505070.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.680028975	1309590.002	1505040.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.768094003	1309590.002	1505010.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.762629986	1309590.002	1504890.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.766277015	1309560.002	1504860.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.760798991	1309590.002	1504860.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.766277015	1309560.002	1504830.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.757125974	1309590.002	1504830.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.765300989	1309530.002	1504800.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.719115973	1309560.002	1504800.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.483061999	1309470.002	1504770.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.481238991	1309500.002	1504770.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.606769979	1309530.002	1504770.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.611971974	1309440.002	1504740.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.499552995	1309470.002	1504740.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.497700006	1309500.002	1504740.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.726994991	1309830.002	1504650.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.491522998	1309860.002	1504650.005	252	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.78866303	1309890.002	1504650.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.245994002	1309770.002	1504620.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.728891015	1309800.002	1504620.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.48785001	1309830.002	1504620.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.690419018	1310100.002	1504440.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.797388971	1310010.002	1504410.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.789478004	1310040.002	1504410.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.660349011	1310070.002	1504410.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.595224977	1310100.002	1504410.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.543281019	1309950.002	1504380.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.644491017	1309980.002	1504380.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.746568024	1310010.002	1504380.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.678727984	1310040.002	1504380.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.597182989	1310070.002	1504380.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.515478015	1309920.002	1504350.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.59542799	1309950.002	1504350.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.524232984	1309980.002	1504350.005	252	500	moderate
NC	13541	Hexastylis naniflora	19	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	D?	3-Medium	0.53363198	1310010.002	1504350.005	252	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.237736002	1287180.002	1499340.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.265246004	1287150.002	1499310.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.316204995	1287180.002	1499310.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.456375986	1287120.002	1499280.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.378024995	1287150.002	1499280.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.656584024	1287540.002	1499280.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.359845996	1287090.002	1499250.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.367514998	1287120.002	1499250.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.724731982	1287390.002	1499250.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.803231001	1287420.002	1499250.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.810033977	1287510.002	1499250.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.646309018	1287060.002	1499220.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.806644022	1287360.002	1499220.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.743865013	1287390.002	1499220.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.714717984	1287420.002	1499220.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.513374984	1287540.002	1499220.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.175267994	1287060.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.341915995	1287300.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.083415397	1287330.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.747591972	1287360.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.745730996	1287390.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.637879014	1287420.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.635927975	1287450.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.632757008	1287540.002	1499190.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.391454995	1287300.002	1499160.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.511501014	1287390.002	1499160.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.412263006	1287420.002	1499160.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.636686027	1287570.002	1499160.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.184028	1287600.002	1499160.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.672048986	1287630.002	1499160.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.622933984	1287330.002	1499130.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.804940999	1287360.002	1499130.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.633669972	1287390.002	1499130.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.815833986	1287420.002	1499130.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.632757008	1287570.002	1499130.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.727292001	1287630.002	1499130.005	303	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.628827989	1287420.002	1499100.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.544448972	1287600.002	1499100.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.435396999	1287630.002	1499070.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.817498028	1287660.002	1499070.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.547250986	1287630.002	1499040.005	303	500	moderate
NC	35113	Hexastylis naniflora	303	Dwarf-flowered Heartleaf	2015-04-28	2015-04-28	2015-04-28	Current	AB	2-High	0.73209101	1287491.3	1499319.491	303	500	moderate
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.646669984	1306440.002	1495530.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.654538989	1306470.002	1495500.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.603049994	1306500.002	1495500.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.914227009	1306560.002	1495500.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.913093984	1306590.002	1495500.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.698095024	1306530.002	1495470.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.919884026	1306560.002	1495470.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.890919983	1306590.002	1495470.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.678644001	1306350.002	1495440.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.919884026	1306560.002	1495440.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.890919983	1306590.002	1495440.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.686444998	1306380.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.684496999	1306410.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.64863801	1306440.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.890919983	1306560.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.82229501	1306590.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.840357006	1306620.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.256090999	1306650.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.219403997	1306680.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.217341006	1306710.002	1495410.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.888315022	1306530.002	1495380.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.889621973	1306560.002	1495380.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.601086974	1306590.002	1495350.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.660534978	1306530.002	1495320.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.262394011	1306740.002	1495230.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.658571005	1306530.002	1495200.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.561600983	1306560.002	1495200.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.622560024	1306560.002	1495170.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.618623018	1306590.002	1495170.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.612720013	1306620.002	1495170.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.692278981	1306560.002	1495140.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.652674019	1306590.002	1495140.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.690335989	1306560.002	1495110.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.595202029	1306590.002	1495110.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.693183005	1306560.002	1495080.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.582332015	1306590.002	1495080.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.652674019	1306560.002	1495050.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.559666991	1306590.002	1495050.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.652674019	1306560.002	1495020.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.652674019	1306590.002	1495020.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.585416019	1306620.002	1495020.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.65070802	1306590.002	1494990.005	271	99	low
NC	24778	Hexastylis naniflora	271	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2008	Current	C?	2-High	0.591283977	1306620.002	1494990.005	271	99	low
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.80528599	1265040.002	1446750.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.811159015	1265040.002	1446720.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.754956007	1265040.002	1446690.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.86690098	1265010.002	1446660.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.811797023	1265040.002	1446660.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.818843007	1265010.002	1446630.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.815684974	1265040.002	1446630.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.81764698	1265010.002	1446600.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.865110993	1264980.002	1446570.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.81764698	1265010.002	1446570.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.866183996	1264980.002	1446540.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.818805993	1265010.002	1446540.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.818458021	1264980.002	1446510.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.862471998	1265010.002	1446510.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.819557011	1264980.002	1446480.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.816413999	1265010.002	1446480.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.819557011	1264980.002	1446450.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.791218996	1265010.002	1446450.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.820653021	1264980.002	1446420.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.821744978	1265010.002	1446420.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.776347995	1265040.002	1446420.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.870037019	1264980.002	1446390.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.821744978	1265010.002	1446390.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.859242022	1265040.002	1446390.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.820653021	1264980.002	1446360.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.82280302	1265010.002	1446360.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.823175013	1265040.002	1446360.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.762041986	1265070.002	1446360.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.871914029	1264980.002	1446330.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.823826015	1265010.002	1446330.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.825572014	1265040.002	1446330.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.709075987	1265070.002	1446330.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.873694003	1264980.002	1446300.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.823826015	1265010.002	1446300.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.859242022	1265040.002	1446300.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.824846029	1265010.002	1446270.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.859242022	1265040.002	1446270.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.865877986	1265010.002	1446240.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.739435017	1265040.002	1446240.005	99	2000	very high
NC	2113	Hexastylis naniflora	52	Dwarf-flowered Heartleaf	2005-03	2005-03	2001-04-06	Current	C	3-Medium	0.790057003	1265040.002	1446210.005	99	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.714241028	1273830.002	1457490.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.736519992	1273770.002	1457460.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.634875	1273800.002	1457460.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.814363003	1273470.002	1457430.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.867965996	1273500.002	1457430.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.685953021	1273650.002	1457430.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.738400996	1273680.002	1457430.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.778622985	1273470.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.767814994	1273500.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.728492022	1273530.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.769631982	1273560.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.745096028	1273590.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.731293976	1273620.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.716069996	1273650.002	1457400.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.829365015	1273470.002	1457370.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.709396005	1273500.002	1457370.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.710214019	1273530.002	1457370.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.701021016	1273560.002	1457370.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.710658014	1273590.002	1457370.005	154	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.719920993	1273680.002	1457340.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.746892989	1273710.002	1457340.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.739188015	1273740.002	1457340.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.752462029	1273680.002	1457310.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.741931975	1273650.002	1457280.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.747753978	1273680.002	1457280.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.860710979	1273620.002	1457250.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.746892989	1273650.002	1457250.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.857755005	1273590.002	1457220.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.861377001	1273620.002	1457220.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.393359005	1273650.002	1457220.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.844617009	1273140.002	1457190.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.836054981	1273200.002	1457190.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.853264987	1273560.002	1457190.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.848707974	1273110.002	1457160.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.84306401	1273140.002	1457160.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.819845021	1273200.002	1456950.005	154	2000	very high
NC	21348	Hexastylis naniflora	154	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-03-24	Current	C	2-High	0.819845021	1273170.002	1456860.005	154	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.816416979	1273110.002	1444200.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.782683015	1273080.002	1444170.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.871890008	1273110.002	1444170.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.85582	1273140.002	1444170.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.752587974	1273050.002	1444140.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.857312024	1273140.002	1444140.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.851301014	1273170.002	1444080.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.855014026	1273170.002	1444050.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.828081012	1272630.002	1443990.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.827498972	1272660.002	1443990.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.771845996	1272660.002	1443960.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.817722023	1272360.002	1443930.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.779538989	1272690.002	1443930.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.827147007	1272390.002	1443900.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.745820999	1272420.002	1443900.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.782150984	1272690.002	1443900.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.825389028	1272420.002	1443870.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.831911027	1272720.002	1443870.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.771313012	1272750.002	1443870.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.836966991	1272420.002	1443840.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.819109023	1272750.002	1443840.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.768706977	1272780.002	1443840.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.793744028	1272450.002	1443810.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.86027199	1272810.002	1443810.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.873934984	1272840.002	1443810.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.865238011	1272870.002	1443810.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.857312024	1272900.002	1443810.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.865489006	1272870.002	1443780.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.869789004	1272900.002	1443780.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.860951006	1272930.002	1443780.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.814689994	1272480.002	1443720.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.810549021	1272480.002	1443690.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.758194983	1272510.002	1443630.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.778937995	1272510.002	1443600.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.840498984	1272600.002	1443510.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.837348998	1272630.002	1443480.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.837536991	1272720.002	1443420.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.818651021	1272750.002	1443390.005	99	2000	very high
NC	14124	Hexastylis naniflora	75	Dwarf-flowered Heartleaf	2013-07-17	2013-07-17	2003-03-14	Current	A	3-Medium	0.821954012	1272810.002	1443360.005	99	2000	very high
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.740785003	1305360.002	1506330.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.792001009	1305390.002	1506330.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.768296003	1305420.002	1506330.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.654964983	1305330.002	1506300.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.792001009	1305360.002	1506300.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.802395999	1305390.002	1506300.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.822753012	1305420.002	1506300.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.814261973	1305450.002	1506300.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.221302003	1305300.002	1506270.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.508917987	1305330.002	1506270.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.564954996	1305360.002	1506270.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.715662003	1305390.002	1506270.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.807516992	1305420.002	1506270.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.829268992	1305450.002	1506270.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.242219001	1305300.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.532079995	1305330.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.530179977	1305360.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.685558021	1305390.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.71182698	1305420.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.305023998	1305450.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.827650011	1305480.002	1506240.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.202867001	1305300.002	1506210.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.198078007	1305330.002	1506210.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.515079021	1305360.002	1506210.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.526390016	1305390.002	1506210.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.702198029	1305420.002	1506210.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.807516992	1305450.002	1506210.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.200939	1305330.002	1506180.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.200939	1305360.002	1506180.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.526390016	1305390.002	1506180.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.535884976	1305420.002	1506180.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.719485998	1305450.002	1506180.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.526390016	1305360.002	1506150.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.528284013	1305390.002	1506150.005	32	500	moderate
NC	14983	Hexastylis naniflora	32	Dwarf-flowered Heartleaf	2013-06-06	2013-06-06	1995-03-21	Current	D	3-Medium	0.532079995	1305420.002	1506150.005	32	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.175008997	1304670.002	1487280.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.159364998	1304700.002	1487280.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.400243998	1304730.002	1487280.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.180684999	1304640.002	1487250.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.180684999	1304670.002	1487250.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.398604989	1304700.002	1487250.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.401888013	1304730.002	1487250.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.398604989	1304760.002	1487250.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.359142005	1304610.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.081872202	1304640.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.179812998	1304670.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.156265005	1304700.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.396970004	1304730.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.366270006	1304760.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.315286994	1304790.002	1487220.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.357971013	1304610.002	1487190.005	98	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.357618004	1304640.002	1487190.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.178945005	1304670.002	1487190.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.206856996	1304700.002	1487190.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.390473008	1304730.002	1487190.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.443906993	1304760.002	1487190.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.443906993	1304790.002	1487190.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.170996994	1304610.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.356451005	1304640.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.367747992	1304670.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.204898	1304700.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.492713004	1304730.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.427354008	1304760.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.172478005	1304790.002	1487160.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.353424013	1304640.002	1487130.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.35609901	1304670.002	1487130.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.409260988	1304700.002	1487130.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.203924	1304730.002	1487130.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.171641007	1304760.002	1487130.005	98	500	moderate
NC	7166	Hexastylis naniflora	2	Dwarf-flowered Heartleaf	2001	1957-04-28	1957-04-28	Historical	X	3-Medium	0.176393002	1304700.002	1487100.005	98	500	moderate
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.378374994	1330650.002	1506840.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.379956007	1330680.002	1506840.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.306923002	1330710.002	1506840.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.379956007	1330620.002	1506810.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.379956007	1330650.002	1506810.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.381541997	1330680.002	1506810.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.346996993	1330710.002	1506810.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.306923002	1330740.002	1506810.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.689146996	1330620.002	1506780.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.744839013	1330650.002	1506780.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.346996993	1330680.002	1506780.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.375007987	1330710.002	1506780.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.37658	1330740.002	1506780.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.375007987	1330770.002	1506780.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.569585979	1330590.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.571528971	1330620.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.501627982	1330650.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.678725004	1330680.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.780065	1330710.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.748650014	1330740.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.35009101	1330770.002	1506750.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.084824897	1330590.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.410600007	1330620.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.412658989	1330650.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.567252994	1330680.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.608829975	1330710.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.610794008	1330740.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.379738003	1330770.002	1506720.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.565315008	1330620.002	1506690.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.567252994	1330650.002	1506690.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.606868029	1330680.002	1506690.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.622823	1330710.002	1506690.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.612757981	1330740.002	1506690.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.569191992	1330650.002	1506660.005	96	2000	very high
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.616926014	1330680.002	1506660.005	96	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	9318	Hexastylis naniflora	38	Dwarf-flowered Heartleaf	1996-06	1996-06	1996-06	Current	CD	3-Medium	0.699169993	1330710.002	1506660.005	96	2000	very high
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.261943012	1303500.002	1485810.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.263143986	1303530.002	1485810.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.173575997	1303560.002	1485810.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.590785027	1303470.002	1485780.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.503687024	1303500.002	1485780.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.261943012	1303530.002	1485780.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.501829028	1303560.002	1485780.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.505549014	1303590.002	1485780.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.651238978	1303440.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.653203011	1303470.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.653203011	1303500.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.507413983	1303530.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.507413983	1303560.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.653203011	1303590.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.653203011	1303620.002	1485750.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.722370982	1303440.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.71945399	1303470.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.510092974	1303500.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.508222997	1303530.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.715631008	1303560.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.752008021	1303590.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.47439	1303620.002	1485720.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.713715017	1303470.002	1485690.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.501199007	1303500.002	1485690.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.634644985	1303530.002	1485690.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.424214005	1303560.002	1485690.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.656974971	1303590.002	1485690.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.666790009	1303620.002	1485690.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.654121995	1303470.002	1485660.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.495213002	1303500.002	1485660.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.419515997	1303530.002	1485660.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.41782701	1303560.002	1485660.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.421207994	1303590.002	1485660.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.414463997	1303530.002	1485630.005	98	500	moderate
NC	4709	Hexastylis naniflora	60	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2001-04-06	Current	D	3-Medium	0.412788004	1303560.002	1485630.005	98	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.759643972	1291020.002	1447410.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.754719973	1291020.002	1447380.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.74250102	1291050.002	1447350.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.747915983	1291050.002	1447320.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.749927998	1291080.002	1447320.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.806560993	1291050.002	1447290.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.735688984	1291170.002	1447290.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.79450798	1291050.002	1447260.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.75790298	1291170.002	1447260.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.79450798	1291050.002	1447230.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.849892974	1291170.002	1447230.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.79283601	1291050.002	1447200.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.836687982	1291170.002	1447200.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.755204976	1291080.002	1447170.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.675246	1291140.002	1447170.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.675246	1291080.002	1447140.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.715807974	1291110.002	1447140.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.695635021	1291140.002	1447140.005	274	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.613492012	1291110.002	1447110.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.675246	1291140.002	1447110.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.675246	1291140.002	1447080.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.592934012	1291140.002	1447050.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.592934012	1291140.002	1447020.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.738444984	1291170.002	1446990.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.69847399	1291170.002	1446960.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.742518008	1291200.002	1446960.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.795832992	1291230.002	1446960.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.678111017	1291170.002	1446930.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.572493017	1291140.002	1446900.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.552222013	1291140.002	1446870.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.512391984	1291140.002	1446840.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.512391984	1291140.002	1446810.005	274	500	moderate
NC	25900	Hexastylis naniflora	274	Dwarf-flowered Heartleaf	2012-03-03	2012-03-03	2008-03-17	Current	A?	2-High	0.661208987	1291170.002	1446810.005	274	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.676720977	1305420.002	1487760.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.610476971	1305450.002	1487760.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.586576998	1305360.002	1487730.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.56794101	1305390.002	1487730.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.598704994	1305420.002	1487730.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.599156022	1305450.002	1487730.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.679717004	1305300.002	1487700.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.784111023	1305330.002	1487700.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.747189999	1305360.002	1487700.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.673354983	1305390.002	1487700.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.491025001	1305420.002	1487700.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.490601987	1305450.002	1487700.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.783159971	1305210.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.675813973	1305240.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.675813973	1305270.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.745325983	1305300.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.780556977	1305330.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.689639986	1305360.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.460649014	1305390.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.485520005	1305420.002	1487670.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.73971498	1305150.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.74158901	1305180.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.685747981	1305210.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.775188029	1305240.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.687695026	1305270.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.752985001	1305300.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.743458986	1305330.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.74158901	1305360.002	1487640.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.771586001	1305060.002	1487610.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.771586001	1305090.002	1487610.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.677944005	1305120.002	1487610.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.466643006	1305150.002	1487610.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.679898024	1305030.002	1487580.005	98	500	moderate
NC	109	Hexastylis naniflora	4	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1981-10	Current	CD	3-Medium	0.777203023	1305090.002	1487580.005	98	500	moderate
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.789947987	1290570.002	1510350.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.826784015	1290600.002	1510350.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.766336977	1290630.002	1510350.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.740539014	1290540.002	1510320.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.831632018	1290570.002	1510320.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.769966006	1290600.002	1510320.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.67227602	1290630.002	1510320.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.857308984	1290480.002	1510290.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.72814697	1290510.002	1510290.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.826030016	1290540.002	1510290.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.777997017	1290570.002	1510290.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.769966006	1290600.002	1510290.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.857652009	1290450.002	1510260.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.764349997	1290480.002	1510260.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.857308984	1290510.002	1510260.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.835684001	1290540.002	1510260.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.738035023	1290570.002	1510260.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.772027016	1290420.002	1510230.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.768408	1290450.002	1510230.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.85581702	1290480.002	1510230.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.867534995	1290510.002	1510230.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.782521009	1290540.002	1510230.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.762629986	1290420.002	1510200.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.852539003	1290450.002	1510200.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.819383979	1290480.002	1510200.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.827579975	1290510.002	1510200.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.825953007	1290450.002	1510170.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.896324992	1290480.002	1510170.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.764200985	1290510.002	1510170.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.897579014	1290450.002	1510140.005	178	2000	very high
NC	21389	Hexastylis naniflora	161	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2004-Fall	Current	A	3-Medium	0.861835003	1290480.002	1510140.005	178	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.698571026	1286640.002	1449690.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.700505018	1286610.002	1449660.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.758975983	1286640.002	1449660.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.766287029	1286550.002	1449630.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.630074024	1286580.002	1449630.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.753350019	1286610.002	1449630.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.796948016	1286520.002	1449600.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.693020999	1286550.002	1449600.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.685240984	1286580.002	1449600.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.777121007	1286460.002	1449570.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.780263007	1286430.002	1449540.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.802124023	1286460.002	1449540.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.775327027	1286430.002	1449510.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.722389996	1286400.002	1449480.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.671769023	1286430.002	1449480.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.787518978	1286370.002	1449450.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.665889025	1286430.002	1449450.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.788685977	1286340.002	1449420.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.814329028	1286370.002	1449420.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.790910006	1286310.002	1449390.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.824334979	1286280.002	1449360.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.818975985	1286310.002	1449360.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.81605202	1286190.002	1449330.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.798623025	1286220.002	1449330.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.821928978	1286250.002	1449330.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.785948992	1286190.002	1449300.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.694966972	1286220.002	1449300.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.69164598	1286250.002	1449300.005	100	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.810374022	1286070.002	1449120.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.796900988	1286070.002	1449090.005	100	2000	very high
NC	21300	Hexastylis naniflora	149	Dwarf-flowered Heartleaf	2012-05-15	2012-05-15	2001	Current	A	2-High	0.831176996	1286070.002	1449060.005	100	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.760839999	1305210.002	1457520.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.273332	1305240.002	1457520.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.366324991	1305270.002	1457520.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.765680015	1305300.002	1457520.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.33743301	1305150.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.657289028	1305180.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.798784971	1305210.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.802228987	1305240.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.879269004	1305270.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.861862004	1305300.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.454948008	1305420.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.697930992	1305450.002	1457490.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.522854984	1305150.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.713247001	1305180.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.802228987	1305210.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.815797985	1305240.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.819122016	1305270.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.820774972	1305300.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.825695992	1305330.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.609632015	1305420.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.615375996	1305450.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.705058992	1305480.002	1457460.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.528843999	1305180.002	1457430.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.715164006	1305210.002	1457430.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.789793015	1305270.002	1457430.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.782517016	1305300.002	1457430.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.69986099	1305420.002	1457430.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.706339002	1305450.002	1457430.005	214	2000	very high
NC	22210	Hexastylis naniflora	201	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	2000	Current	D	3-Medium	0.712459981	1305480.002	1457430.005	214	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.804561019	1289880.002	1510530.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.856691003	1289910.002	1510530.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.813030005	1289940.002	1510530.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.814706028	1289970.002	1510530.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.899416983	1290000.002	1510530.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.786427021	1289610.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.821114004	1289640.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.735369027	1289670.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.719325006	1289790.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.837503016	1289820.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.808753014	1289850.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.854260027	1289880.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.803644001	1289910.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.799409986	1289940.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.706562996	1289970.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.699657023	1290000.002	1510500.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.716376007	1289580.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.747232974	1289610.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.750948012	1289640.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.745369971	1289670.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.354912996	1289820.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.755980015	1289850.002	1510470.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.718078017	1289880.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.704635978	1289910.002	1510470.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.827584982	1289550.002	1510440.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.730355978	1289580.002	1510440.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.745369971	1289610.002	1510440.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.647985995	1289640.002	1510440.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.82269001	1289550.002	1510410.005	178	2000	very high
NC	28350	Hexastylis naniflora	281	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.648679972	1289580.002	1510410.005	178	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.788552999	1271040.002	1444890.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.685491025	1271010.002	1444860.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.756639004	1271040.002	1444860.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.693270028	1271010.002	1444830.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.69520998	1271040.002	1444830.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.784197986	1271070.002	1444830.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.691327989	1270980.002	1444800.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.697148025	1271010.002	1444800.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.791244984	1271040.002	1444800.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.763971984	1270980.002	1444770.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.787732005	1271010.002	1444770.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.765794992	1270920.002	1444740.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.801554024	1270950.002	1444740.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.756861985	1270890.002	1444710.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.79993403	1270920.002	1444710.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.755496025	1270890.002	1444680.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.762570024	1270860.002	1444650.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.712310016	1270860.002	1444620.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.774591029	1270860.002	1444590.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.810159028	1270860.002	1444560.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.806545973	1270860.002	1444530.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.717393994	1270830.002	1444500.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.804224014	1270860.002	1444500.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.718625009	1270830.002	1444470.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.718625009	1270830.002	1444440.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.719816983	1270800.002	1444410.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.81103301	1270830.002	1444410.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.721009016	1270800.002	1444380.005	99	2000	very high
NC	16879	Hexastylis naniflora	61	Dwarf-flowered Heartleaf	2002-02-03	2002-02-03	2002-02-03	Current	B	3-Medium	0.814203978	1270800.002	1444350.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.766234994	1265430.002	1446870.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.758921981	1265430.002	1446840.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.768051982	1265430.002	1446810.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.78876102	1265400.002	1446780.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.773477018	1265430.002	1446780.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.758921981	1265460.002	1446780.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.760757029	1265490.002	1446780.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.790516973	1265400.002	1446750.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.780644	1265430.002	1446750.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.769864976	1265460.002	1446750.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.777069986	1265430.002	1446720.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.786791027	1265430.002	1446690.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.790309012	1265430.002	1446660.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.771673024	1265460.002	1446660.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.77611202	1265460.002	1446630.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.672991991	1265490.002	1446630.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.786791027	1265460.002	1446600.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.777069986	1265490.002	1446600.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.691673994	1265520.002	1446600.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.801862001	1265460.002	1446570.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.801862001	1265490.002	1446570.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.787944019	1265520.002	1446570.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.756639004	1265460.002	1446540.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.804369986	1265490.002	1446540.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.782423973	1265520.002	1446540.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.807775974	1265490.002	1446510.005	99	2000	very high
NC	22430	Hexastylis naniflora	251	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.791244984	1265520.002	1446510.005	99	2000	very high
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.301411003	1285020.002	1496040.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.361490995	1285050.002	1496040.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.273790002	1284990.002	1496010.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.178194001	1285020.002	1496010.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.274417996	1285050.002	1496010.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.485321999	1284960.002	1495980.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.371609986	1284990.002	1495980.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.460509986	1285020.002	1495980.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.608668983	1285530.002	1495800.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.746801972	1285500.002	1495770.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.714568973	1285530.002	1495770.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.674337029	1285560.002	1495770.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.68195498	1285590.002	1495770.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.725888014	1285500.002	1495740.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.674148977	1285530.002	1495740.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.520281971	1285560.002	1495740.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.560666978	1285590.002	1495740.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.626205981	1285560.002	1495710.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.570807993	1285590.002	1495710.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.56022501	1285620.002	1495710.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.684219003	1285590.002	1495680.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.565509975	1285620.002	1495680.005	304	500	moderate
NC	35185	Hexastylis naniflora	304	Dwarf-flowered Heartleaf	2015-05-05	2015-05-05	2015-03	Current	B?	2-High	0.670050979	1285620.002	1495650.005	304	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.458916008	1267830.002	1442550.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.621025026	1267800.002	1442520.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.62737298	1267830.002	1442520.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.610832989	1267860.002	1442520.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.565407991	1267770.002	1442490.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.610832989	1267800.002	1442490.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.621025026	1267830.002	1442490.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.510793984	1267860.002	1442490.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.662678003	1267740.002	1442460.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.706092	1267770.002	1442460.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.698367	1267800.002	1442460.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.609229982	1267740.002	1442430.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.704164028	1267770.002	1442430.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.694491982	1267740.002	1442400.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.705063999	1267770.002	1442400.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.698367	1267740.002	1442370.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.703135014	1267770.002	1442370.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.701204002	1267740.002	1442340.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.698367	1267770.002	1442340.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.703135014	1267740.002	1442310.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.650646985	1267710.002	1442280.005	248	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.698367	1267740.002	1442280.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.686478972	1267710.002	1442250.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.701204002	1267740.002	1442250.005	248	500	moderate
NC	8494	Hexastylis naniflora	40	Dwarf-flowered Heartleaf	2005-04-12	2005-04-12	1994-06	Current	C	3-Medium	0.696430027	1267710.002	1442220.005	248	500	moderate
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.701654971	1269570.002	1449720.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.837619007	1269600.002	1449720.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.701654971	1269600.002	1449690.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.795005023	1269630.002	1449690.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.798473001	1269660.002	1449690.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.837858975	1269690.002	1449690.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.756112993	1269690.002	1449660.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.839434981	1269720.002	1449660.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.84482801	1269750.002	1449660.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.841718018	1269780.002	1449660.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.841004014	1269780.002	1449630.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.847908974	1269810.002	1449630.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.856972992	1269780.002	1449600.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.80786097	1269810.002	1449600.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.844120979	1269840.002	1449600.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.848742008	1269870.002	1449600.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.897771001	1269900.002	1449600.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.819540024	1269750.002	1449570.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.761622012	1269870.002	1449570.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.768908024	1269900.002	1449570.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.892127991	1269930.002	1449570.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.897206008	1269960.002	1449570.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.889388025	1269990.002	1449570.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.610587001	1269750.002	1449540.005	247	2000	very high
NC	20301	Hexastylis naniflora	106	Dwarf-flowered Heartleaf	2015-04-23	2015-04-23	2003-05-15	Current	A	3-Medium	0.828720987	1269990.002	1449540.005	247	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.344195008	1302750.002	1462410.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.345678985	1302780.002	1462410.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.766870975	1302720.002	1462380.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.777908981	1302750.002	1462380.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.779695988	1302780.002	1462380.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.781477988	1302810.002	1462380.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.772305012	1302840.002	1462380.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.666971028	1302720.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.770712972	1302750.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.654053986	1302780.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.656020999	1302810.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.674805999	1302840.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.729151011	1302870.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.672849	1302900.002	1462350.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.483182013	1302780.002	1462320.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.661083996	1302810.002	1462320.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.666971028	1302840.002	1462320.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.668932021	1302870.002	1462320.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.469208986	1302900.002	1462320.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.666971028	1302840.002	1462290.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.465618014	1302870.002	1462290.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.465618014	1302900.002	1462290.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.169421002	1302930.002	1462290.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.460256994	1302870.002	1462260.005	216	2000	very high
NC	22203	Hexastylis naniflora	196	Dwarf-flowered Heartleaf	2006-04-29	2006-04-29	1998-2000	Current	D	3-Medium	0.460671008	1302900.002	1462260.005	216	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.660573006	1261260.002	1443840.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.734852016	1261050.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.727055013	1261080.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.742359996	1261110.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.742359996	1261140.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.658609986	1261170.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.658609986	1261200.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.648543	1261230.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.650509	1261260.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.662536025	1261290.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.662536025	1261320.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.664497018	1261350.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.664497018	1261380.002	1443810.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.725157022	1261050.002	1443780.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.652474999	1261320.002	1443780.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.652474999	1261350.002	1443780.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.263042986	1261380.002	1443780.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.256927013	1261410.002	1443780.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.648792028	1261050.002	1443750.005	125	2000	very high
NC	21275	Hexastylis naniflora	125	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1994	Current	A	3-Medium	0.322490007	1261470.002	1443750.005	125	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.845171988	1273260.002	1446360.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.703252017	1273290.002	1446360.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.854321003	1273230.002	1446330.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.840498984	1273260.002	1446330.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.610248029	1273290.002	1446330.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.786215007	1273200.002	1446300.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.840498984	1273230.002	1446300.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.744373977	1273260.002	1446300.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.625737011	1273290.002	1446300.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.794556975	1273140.002	1446270.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.780893981	1273170.002	1446270.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.795846999	1273110.002	1446240.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.786215007	1273110.002	1446210.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.798205972	1273080.002	1446180.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.801633	1273050.002	1446150.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.702211976	1273020.002	1446120.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.799350977	1273050.002	1446120.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.681608021	1273050.002	1446090.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.674772024	1273080.002	1446090.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.759528995	1273110.002	1446090.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.754005015	1273140.002	1446090.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.752155006	1273170.002	1446090.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.752155006	1273200.002	1446090.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.750302017	1273200.002	1446060.005	245	2000	very high
NC	20332	Hexastylis naniflora	113	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-15	Current	C	3-Medium	0.788336992	1273230.002	1446030.005	245	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.569417	1303770.002	1460610.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.632901013	1303800.002	1460610.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.636838019	1303830.002	1460610.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.485772997	1303740.002	1460580.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.557120979	1303770.002	1460580.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.569859982	1303800.002	1460580.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.628964007	1303830.002	1460580.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.400243014	1303740.002	1460550.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.567919016	1303770.002	1460550.005	216	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.49395901	1303800.002	1460550.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.67692399	1303830.002	1460550.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.398604006	1303740.002	1460520.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.488440007	1303770.002	1460520.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.558799982	1303800.002	1460520.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.561752975	1303830.002	1460520.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.588539004	1303800.002	1460490.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.659052014	1303830.002	1460490.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.550173998	1303860.002	1460490.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.657087982	1303800.002	1460460.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.657087982	1303830.002	1460460.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.473571986	1303860.002	1460460.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.550173998	1303830.002	1460430.005	216	2000	very high
NC	22206	Hexastylis naniflora	199	Dwarf-flowered Heartleaf	2007-04	2007-04	1998-2000	Current	B	3-Medium	0.651480019	1303856.114	1460748.968	216	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.662784994	1261230.002	1457970.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.660821974	1261260.002	1457940.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.667756975	1261170.002	1457910.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.659907997	1261230.002	1457910.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.655978978	1261290.002	1457910.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.670015991	1261170.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.679732978	1261200.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.654012978	1261320.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.520439029	1261440.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.518553019	1261470.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.551515996	1261500.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.553443015	1261530.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.507297993	1261560.002	1457880.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.662109971	1261200.002	1457850.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.524218023	1261440.002	1457850.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.648111999	1261380.002	1457820.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.558205009	1261440.002	1457820.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.661059976	1261380.002	1457760.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.650996029	1261410.002	1457760.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.661059976	1261410.002	1457730.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.564010024	1261440.002	1457730.005	176	2000	very high
NC	21398	Hexastylis naniflora	167	Dwarf-flowered Heartleaf	2005-04-06	2005-04-06	2005-04-06	Current	A	2-High	0.516671002	1261500.002	1457700.005	176	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.679765999	1304010.002	1459680.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.785733998	1304040.002	1459680.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.685841024	1303980.002	1459650.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.689724028	1304010.002	1459650.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.598683	1304040.002	1459650.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.317081988	1304070.002	1459650.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.543666005	1303950.002	1459620.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.534251988	1303980.002	1459620.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.636072993	1304010.002	1459620.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.355033994	1304040.002	1459620.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.580852985	1304070.002	1459620.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.300108999	1303920.002	1459590.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.528554976	1303950.002	1459590.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.530451	1303980.002	1459590.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.632139981	1304010.002	1459590.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.311545998	1304040.002	1459590.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.236814007	1303920.002	1459560.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.298774004	1303950.002	1459560.005	216	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.112733997	1303980.002	1459560.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.161310002	1304010.002	1459560.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.111040004	1303950.002	1459530.005	216	2000	very high
NC	22208	Hexastylis naniflora	200	Dwarf-flowered Heartleaf	2000-04-10	2000-04-10	2000-04-10	Current	D	3-Medium	0.111602001	1303980.002	1459530.005	216	2000	very high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.315762997	1303260.002	1465590.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.742619991	1303290.002	1465590.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.409711987	1303260.002	1465560.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.686828017	1303290.002	1465560.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.73408699	1303290.002	1465380.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.735107005	1303320.002	1465380.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.743770003	1303350.002	1465380.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.751213014	1303380.002	1465380.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.803348005	1303410.002	1465380.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.677178025	1303440.002	1465380.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.792595983	1303380.002	1465350.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.749064028	1303410.002	1465350.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.740818977	1303440.002	1465350.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.792999983	1303380.002	1465320.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.814131975	1303410.002	1465320.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.740818977	1303440.002	1465320.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.785565019	1303380.002	1465290.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.814131975	1303410.002	1465290.005	232	1000	high
NC	22372	Hexastylis naniflora	231	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	1998-05-18	Current	D	3-Medium	0.814131975	1303440.002	1465290.005	232	1000	high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.798762977	1286160.002	1450500.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.767087996	1286190.002	1450500.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.752328992	1286130.002	1450470.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.775391996	1286490.002	1450290.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.772795975	1286520.002	1450290.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.77413398	1286490.002	1450260.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.771320999	1286520.002	1450260.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.769617975	1286550.002	1450260.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.772261024	1286580.002	1450260.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.673864007	1286520.002	1450230.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.780934989	1286610.002	1450230.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.858816028	1286640.002	1450230.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.747578025	1286850.002	1450170.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.740652978	1286880.002	1450170.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.626114011	1286880.002	1450140.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.65099299	1286910.002	1450140.005	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.778963029	1286415.371	1450350.021	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.865464985	1286385.19	1450405.727	100	2000	very high
NC	22386	Hexastylis naniflora	238	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001-2003	Current	A	2-High	0.875974	1286280.616	1450427.99	100	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.634660006	1268460.002	1446900.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.622844994	1268490.002	1446900.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.636629999	1268460.002	1446870.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.640568018	1268430.002	1446840.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.642536998	1268400.002	1446810.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.590838015	1268430.002	1446810.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.642536998	1268370.002	1446780.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.638598979	1268400.002	1446780.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.588257015	1268310.002	1446750.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.592171013	1268340.002	1446750.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.641485989	1268370.002	1446750.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.667271972	1268280.002	1446720.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.586301982	1268310.002	1446720.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.640568018	1268280.002	1446690.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.652374983	1268250.002	1446660.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.654341996	1268220.002	1446630.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.608781993	1268190.002	1446570.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.663114011	1268190.002	1446540.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.66496098	1268160.002	1446360.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.618344009	1268130.002	1446300.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.611320972	1268160.002	1446300.005	99	2000	very high
NC	21832	Hexastylis naniflora	181	Dwarf-flowered Heartleaf	2012-Spring	2012-Spring	2001-03-27	Current	AB	3-Medium	0.675673008	1268133.035	1446419.698	99	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.814126015	1303620.002	1463640.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.777163982	1303650.002	1463640.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.816568017	1303590.002	1463610.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.812448025	1303620.002	1463610.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.709079981	1303650.002	1463610.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.756752014	1303530.002	1463580.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.818229973	1303560.002	1463580.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.815797985	1303590.002	1463580.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.706710994	1303620.002	1463580.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.434978008	1303650.002	1463580.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.735970974	1303500.002	1463550.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.749064982	1303530.002	1463550.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.728839993	1303560.002	1463550.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.712480009	1303590.002	1463550.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.559742987	1303620.002	1463550.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.756752014	1303500.002	1463520.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.712585986	1303530.002	1463520.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.773572028	1303560.002	1463520.005	216	2000	very high
NC	643	Hexastylis naniflora	28	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	1996-05-03	Current	B	2-High	0.770309985	1303500.002	1463490.005	216	2000	very high
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.796464026	1306020.002	1455690.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.438304991	1306050.002	1455690.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.432260007	1305990.002	1455660.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.794164002	1306020.002	1455660.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.794164002	1306050.002	1455660.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.437020004	1306080.002	1455660.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.385434985	1305990.002	1455630.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.78857398	1306020.002	1455630.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.800997019	1306050.002	1455630.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.471329987	1306080.002	1455630.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.702310979	1306020.002	1455600.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.792948008	1306050.002	1455600.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.806713998	1306080.002	1455600.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.797610998	1306110.002	1455600.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.710973978	1306050.002	1455570.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.800997019	1306080.002	1455570.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.806713998	1306110.002	1455570.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.792948008	1306080.002	1455540.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.632084012	1306140.002	1455450.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.639889002	1306140.002	1455420.005	206	99	low
NC	22217	Hexastylis naniflora	206	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2003	Current	D	3-Medium	0.703247011	1306170.002	1455420.005	206	99	low
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.189429	1269720.002	1445820.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.192179993	1269750.002	1445820.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.416785985	1269780.002	1445820.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.741611004	1269750.002	1445700.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.212220997	1269750.002	1445670.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.746631026	1269780.002	1445670.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.171439007	1269780.002	1445640.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.756742001	1269810.002	1445640.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.759181023	1269840.002	1445610.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.712638974	1269810.002	1445580.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.700971007	1269840.002	1445580.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.741611004	1269660.002	1445550.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.745395005	1269690.002	1445550.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.746631026	1269720.002	1445550.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.712638974	1269750.002	1445550.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.750141025	1269780.002	1445550.005	99	2000	very high
NC	10378	Hexastylis naniflora	55	Dwarf-flowered Heartleaf	2016-05-25	2016-05-25	2001-04-01	Current	AB	2-High	0.582899988	1269810.002	1445550.005	99	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.595830977	1306530.002	1456410.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.497135013	1306560.002	1456410.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.298593014	1306440.002	1456380.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.621999979	1306470.002	1456380.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.62450099	1306500.002	1456380.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.607522011	1306530.002	1456380.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.586775005	1306560.002	1456380.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.616771996	1306470.002	1456350.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.619386017	1306500.002	1456350.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.625733018	1306530.002	1456350.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.532405972	1306560.002	1456350.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.708577991	1306380.002	1456290.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.79776299	1306410.002	1456290.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.78362298	1306440.002	1456290.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.709812999	1306350.002	1456260.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.800997019	1306380.002	1456260.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.783636987	1306410.002	1456260.005	214	2000	very high
NC	22215	Hexastylis naniflora	204	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	A?	2-High	0.433562011	1306380.002	1456230.005	214	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.845734	1266270.002	1445370.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.793591976	1266240.002	1445340.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.838469982	1266270.002	1445340.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.799983025	1266300.002	1445340.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.703971028	1266180.002	1445310.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.769954979	1266210.002	1445310.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.850246012	1266240.002	1445310.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.822854996	1266270.002	1445310.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.789714992	1266300.002	1445310.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.784807026	1266150.002	1445280.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.800522029	1266180.002	1445280.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.841072977	1266210.002	1445280.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.797671974	1266240.002	1445280.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.657163978	1266060.002	1445250.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.732136011	1266090.002	1445250.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.823637009	1266120.002	1445250.005	99	2000	very high
NC	22429	Hexastylis naniflora	250	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	3-Medium	0.788336992	1266150.002	1445250.005	99	2000	very high
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.306903005	1265370.002	1458600.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.445921004	1265400.002	1458600.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.414627999	1265430.002	1458600.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.456707001	1265370.002	1458570.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.458483011	1265400.002	1458570.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.458483011	1265430.002	1458570.005	292	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.45323801	1265370.002	1458540.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.45323801	1265400.002	1458540.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.449712008	1265370.002	1458510.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.451472998	1265400.002	1458510.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.372355998	1265340.002	1458480.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.418172985	1265370.002	1458480.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.406468987	1265400.002	1458480.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.385304987	1265430.002	1458480.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.411193013	1265370.002	1458450.005	292	500	moderate
NC	29084	Hexastylis naniflora	292	Dwarf-flowered Heartleaf	2010	2010	2010	Current	D	2-High	0.386536002	1265400.002	1458450.005	292	500	moderate
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.780879021	1295580.002	1460640.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.636515975	1295610.002	1460640.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.774697006	1295550.002	1460610.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.772592008	1295580.002	1460610.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.630611002	1295610.002	1460610.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.618800998	1295640.002	1460610.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.775887012	1295520.002	1460580.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.772592008	1295550.002	1460580.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.733066022	1295580.002	1460580.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.624705017	1295610.002	1460580.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.771396995	1295520.002	1460550.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.731525004	1295550.002	1460550.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.633449972	1295580.002	1460550.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.768998981	1295520.002	1460520.005	217	2000	very high
NC	22200	Hexastylis naniflora	193	Dwarf-flowered Heartleaf	2000-10	2000-10	1998-2000	Current	C	3-Medium	0.698175013	1295550.002	1460520.005	217	2000	very high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.127513006	1298910.002	1518240.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.096638799	1298850.002	1518210.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.167145997	1298880.002	1518210.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.127009004	1298910.002	1518210.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.12387	1298940.002	1518210.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.096638799	1298820.002	1518180.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.265195012	1298850.002	1518180.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.603654027	1298880.002	1518180.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.119800001	1298910.002	1518180.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.102169	1298940.002	1518180.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.286839992	1298820.002	1518150.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.260414988	1298850.002	1518150.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.582931995	1298880.002	1518150.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.696721971	1298790.002	1518120.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.285562009	1298820.002	1518120.005	44	1000	high
NC	12549	Hexastylis naniflora	44	Dwarf-flowered Heartleaf	2011-05-02	2011-05-02	1998-05-18	Current	ABr	2-High	0.696721971	1298700.002	1518030.005	44	1000	high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.547384977	1315590.002	1509420.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.549305022	1315560.002	1509390.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.551227987	1315590.002	1509390.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.554037988	1315530.002	1509360.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.557896018	1315560.002	1509360.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.557896018	1315530.002	1509330.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.374229997	1315440.002	1509270.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.384665012	1315470.002	1509270.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.389483005	1315500.002	1509270.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.457497001	1315440.002	1509240.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.470669001	1315470.002	1509240.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.506030023	1315500.002	1509240.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.61086899	1315440.002	1509210.005	179	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.606940985	1315470.002	1509210.005	179	2000	very high
NC	14501	Hexastylis naniflora	30	Dwarf-flowered Heartleaf	2013-06-05	2013-06-05	1995-03-22	Current	CD	2-High	0.603015006	1315500.002	1509210.005	179	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.589092016	1270320.002	1445460.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.741057992	1270380.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.820147991	1270410.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.807672024	1270470.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.819283009	1270500.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.709693015	1270530.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.79993403	1270560.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.806989014	1270650.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.80528599	1270680.002	1445430.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.81685102	1270470.002	1445400.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.717794001	1270590.002	1445400.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.709075987	1270620.002	1445400.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.815744996	1270470.002	1445370.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.805415988	1270500.002	1445340.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.798206985	1270530.002	1445280.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.802954972	1270530.002	1445250.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.792994022	1270590.002	1445220.005	99	2000	very high
NC	20242	Hexastylis naniflora	79	Dwarf-flowered Heartleaf	2012-05	2012-05	2001-04-01	Current	C	3-Medium	0.787732005	1270620.002	1445190.005	99	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.791863024	1304730.002	1457970.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.647489011	1304760.002	1457970.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.647489011	1304730.002	1457940.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.641587973	1304760.002	1457940.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.791863024	1304700.002	1457910.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.643555999	1304730.002	1457910.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.635684013	1304760.002	1457910.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.643555999	1304730.002	1457880.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.622740984	1304760.002	1457880.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.649455011	1304730.002	1457850.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.690842986	1304760.002	1457850.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.733552992	1304730.002	1457820.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.690842986	1304760.002	1457820.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.42080301	1304730.002	1457790.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.417423993	1304760.002	1457790.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.133673996	1304790.002	1457790.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.116099998	1304760.002	1457760.005	214	2000	very high
NC	22213	Hexastylis naniflora	202	Dwarf-flowered Heartleaf	2000-10-25	2000-10-25	1998-2000	Current	A	2-High	0.111872002	1304790.002	1457760.005	214	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.765137017	1290840.002	1510380.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.707005024	1290810.002	1510350.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.70520401	1290840.002	1510350.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.754799008	1290870.002	1510350.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.756522	1290900.002	1510350.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.687089026	1290930.002	1510350.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.692480981	1290810.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.68530798	1290840.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.683975995	1290870.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.680406988	1290900.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.340454012	1290930.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.341789991	1290960.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.340454012	1290990.002	1510320.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.69066602	1290810.002	1510290.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.683975995	1290840.002	1510290.005	178	2000	very high
NC	21388	Hexastylis naniflora	160	Dwarf-flowered Heartleaf	2013-05-14	2013-05-14	2004-Fall	Current	A	3-Medium	0.343129992	1290810.002	1510260.005	178	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.885986984	1288620.002	1510620.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.880617976	1288650.002	1510620.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.881973028	1288680.002	1510620.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.841652989	1288710.002	1510620.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.691192985	1288620.002	1510590.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.685355008	1288650.002	1510590.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.865182996	1288680.002	1510590.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.876505017	1288710.002	1510590.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.876505017	1288740.002	1510590.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.772208989	1288680.002	1510560.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.775638998	1288710.002	1510560.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.870908022	1288740.002	1510560.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.873722017	1288770.002	1510560.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.463512987	1288710.002	1510530.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.772208989	1288740.002	1510530.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.837453008	1288770.002	1510530.005	178	2000	very high
NC	28353	Hexastylis naniflora	284	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-10-21	Current	E	3-Medium	0.87528199	1288800.002	1510530.005	178	2000	very high
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.646143973	1283580.002	1479900.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.652047992	1283550.002	1479870.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.646143973	1283580.002	1479870.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.650080025	1283580.002	1479840.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.646143973	1283820.002	1479750.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.654013991	1283790.002	1479720.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.646143973	1283820.002	1479720.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.608152986	1283850.002	1479720.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.659910023	1283760.002	1479690.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.619958997	1283790.002	1479690.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.448749006	1283820.002	1479690.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.43207401	1283850.002	1479690.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.425621986	1283880.002	1479690.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.544439971	1283790.002	1479660.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.430754989	1283820.002	1479660.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.427329004	1283850.002	1479660.005	272	500	moderate
NC	24982	Hexastylis naniflora	272	Dwarf-flowered Heartleaf	2007-04-20	2007-04-20	2007-04-20	Current	BC	2-High	0.632358015	1283800.859	1479875.481	272	500	moderate
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.480073005	1304580.002	1458390.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.675410986	1304550.002	1458360.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.481893986	1304580.002	1458360.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.602837026	1304490.002	1458330.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.724521995	1304520.002	1458330.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.716657996	1304550.002	1458330.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.675410986	1304580.002	1458330.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.596957028	1304490.002	1458300.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.678873003	1304520.002	1458300.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.716657996	1304550.002	1458300.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.718569994	1304580.002	1458300.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.613788009	1304520.002	1458270.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.714743018	1304550.002	1458270.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.733992994	1304580.002	1458270.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.619683981	1304550.002	1458240.005	214	2000	very high
NC	22221	Hexastylis naniflora	209	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	2000	Current	BC	3-Medium	0.722386003	1304580.002	1458240.005	214	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.590077996	1292550.002	1461000.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.741905987	1292550.002	1460970.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.697251976	1292580.002	1460970.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.743776023	1292550.002	1460940.005	217	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.703052998	1292580.002	1460940.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.692627013	1292610.002	1460940.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.294566989	1293360.002	1460850.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.682264984	1293390.002	1460850.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.299876988	1293360.002	1460820.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.383949995	1292670.002	1460670.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.382355005	1292700.002	1460670.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.722482026	1293960.002	1460460.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.663123012	1293930.002	1460430.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.718666017	1293960.002	1460430.005	217	2000	very high
NC	35870	Hexastylis naniflora	305	Dwarf-flowered Heartleaf	2015-09-16	2015-09-16	2015	Current	CDr	2-High	0.749929011	1293577.694	1460949.527	217	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.460608989	1263510.002	1454460.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.465974003	1263510.002	1454430.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.465974003	1263540.002	1454430.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.473396987	1263480.002	1454400.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.464183003	1263510.002	1454400.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.478837013	1263540.002	1454400.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.385264009	1263540.002	1454370.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.33127901	1263570.002	1454370.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.216549993	1263630.002	1454370.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.218605995	1263660.002	1454340.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.260105014	1263720.002	1454310.005	177	2000	very high
NC	21394	Hexastylis naniflora	163	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-30	Current	B	2-High	0.269955993	1263750.002	1454280.005	177	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.798326015	1285200.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.870290995	1285230.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.885115027	1285260.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.806289017	1285290.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.861528993	1285320.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.806289017	1285350.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.85026598	1285380.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.685491025	1285410.002	1448610.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.877083004	1285200.002	1448580.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.881004989	1285230.002	1448580.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.805894017	1285380.002	1448580.005	100	2000	very high
NC	22384	Hexastylis naniflora	236	Dwarf-flowered Heartleaf	2001	2001	2001	Current	C	3-Medium	0.777327001	1285410.002	1448580.005	100	2000	very high
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.835260987	1293150.002	1521600.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.828507006	1293180.002	1521600.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.829985976	1293120.002	1521570.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.824038982	1293150.002	1521570.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.81962198	1293120.002	1521540.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.616685987	1293390.002	1521510.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.652571023	1293420.002	1521510.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.605802	1293390.002	1521480.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.651648998	1293690.002	1521300.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.642652988	1293690.002	1521270.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.649851024	1293660.002	1521240.005	291	99	low
NC	28659	Hexastylis naniflora	291	Dwarf-flowered Heartleaf	2010-04-21	2010-04-21	2007-03-28	Current	C	2-High	0.646251976	1293660.002	1521210.005	291	99	low
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.712217987	1293660.002	1460040.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.701694012	1293690.002	1460040.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.702591002	1293660.002	1460010.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.703625023	1293690.002	1460010.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.579267979	1293720.002	1460010.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.583172023	1293660.002	1459980.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.705554008	1293690.002	1459980.005	217	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.581219018	1293720.002	1459980.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.645725012	1293750.002	1459980.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.581219018	1293660.002	1459950.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.585125983	1293690.002	1459950.005	217	2000	very high
NC	22197	Hexastylis naniflora	190	Dwarf-flowered Heartleaf	2006-04-07	2000-10-27	2000-10-27	Historical	F	3-Medium	0.260280997	1293720.002	1459950.005	217	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.705465019	1286100.002	1448610.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.789880991	1286100.002	1448580.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.673542023	1286130.002	1448580.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.618948996	1286160.002	1448580.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.789880991	1286130.002	1448550.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.652493	1286220.002	1448550.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.696787	1286250.002	1448550.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.505321026	1286370.002	1448550.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.792753994	1286250.002	1448520.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.668474972	1286280.002	1448520.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.732720017	1286310.002	1448520.005	100	2000	very high
NC	1667	Hexastylis naniflora	74	Dwarf-flowered Heartleaf	2012-04-12	2012-04-12	2001-03-05	Current	B	2-High	0.745917022	1286340.002	1448520.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.797677994	1285980.002	1449000.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.73328799	1286010.002	1449000.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.758872986	1285950.002	1448970.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.758171976	1285980.002	1448970.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.795422018	1286010.002	1448970.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.759172022	1286040.002	1448970.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.759020984	1285980.002	1448940.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.764144003	1286010.002	1448940.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.759566009	1286040.002	1448940.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.737210989	1286070.002	1448940.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.755725026	1286040.002	1448910.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.812020004	1286070.002	1448910.005	100	2000	very high
NC	22385	Hexastylis naniflora	237	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	1981-05	Current	E	3-Medium	0.739970028	1286100.002	1448910.005	100	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.810764015	1305150.002	1457700.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.666580021	1305060.002	1457670.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.809073985	1305090.002	1457670.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.816568017	1305120.002	1457670.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.615518987	1304970.002	1457640.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.793604016	1305000.002	1457640.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.795346022	1305030.002	1457640.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.80053699	1305060.002	1457640.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.820969999	1305090.002	1457640.005	214	2000	very high
NC	22236	Hexastylis naniflora	213	Dwarf-flowered Heartleaf	2012-03-15	2012-03-15	2000-10-25	Current	CD	2-High	0.814126015	1305120.002	1457640.005	214	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.571865022	1285500.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.810890019	1285530.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.800471008	1285560.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.782154024	1285590.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.800471008	1285620.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.800471008	1285650.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.800471008	1285680.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.800471008	1285710.002	1449240.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.615019023	1285500.002	1449210.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.774975002	1285800.002	1449210.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.77234	1285830.002	1449210.005	100	2000	very high
NC	22399	Hexastylis naniflora	241	Dwarf-flowered Heartleaf	2012-04-03	2012-04-03	2001-2003	Current	D	2-High	0.790952027	1285860.002	1449210.005	100	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.186012998	1321560.002	1526760.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.332121015	1321650.002	1526670.005	308	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.302451015	1321680.002	1526670.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.269627005	1321620.002	1526640.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.260120004	1321650.002	1526640.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.263011992	1321680.002	1526640.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.333819002	1321710.002	1526640.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.217971995	1321530.002	1526610.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.220492005	1321560.002	1526610.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.270853996	1321590.002	1526610.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.335000992	1321620.002	1526610.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.333819002	1321740.002	1526610.005	308	2000	very high
NC	36541	Hexastylis naniflora	308	Dwarf-flowered Heartleaf	2015-03	2015-03	2014-08-14	Current	C	2-High	0.269627005	1321608.517	1526714.568	308	2000	very high
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.537361026	1305750.002	1511730.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.87035501	1305780.002	1511730.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.63836199	1305750.002	1511700.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.836875021	1305780.002	1511700.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.676259995	1305750.002	1511670.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.858767986	1305780.002	1511670.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.710713029	1305810.002	1511670.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.664507985	1305750.002	1511640.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.828876019	1305780.002	1511640.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.673443019	1305810.002	1511640.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.851278007	1305780.002	1511610.005	295	500	moderate
NC	36701	Hexastylis naniflora	313	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.662160993	1305810.002	1511580.005	295	500	moderate
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.483787	1262910.002	1458060.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.485082	1262940.002	1458060.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.485082	1262970.002	1458060.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.375140011	1263090.002	1458060.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.48476401	1262820.002	1458030.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.48842901	1262760.002	1458000.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.497648001	1262520.002	1457970.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.49950099	1262550.002	1457970.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.495797992	1262580.002	1457970.005	176	2000	very high
NC	21399	Hexastylis naniflora	168	Dwarf-flowered Heartleaf	2005-03-30	2005-03-30	2005-03-30	Current	A	2-High	0.492107004	1262670.002	1457970.005	176	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.74436599	1271400.002	1449000.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.755725026	1271430.002	1449000.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.753879011	1271460.002	1449000.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.703881025	1271490.002	1449000.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.749951005	1271370.002	1448970.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.709659994	1271400.002	1448970.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.584088981	1271430.002	1448970.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.570446014	1271460.002	1448970.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.58168602	1271400.002	1448940.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.520126998	1271430.002	1448940.005	247	2000	very high
NC	20334	Hexastylis naniflora	115	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-05	Current	C	2-High	0.767463982	1271100.002	1448790.005	247	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.515016973	1261740.002	1457940.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.488182992	1261740.002	1457910.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.536180973	1261770.002	1457910.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.205844998	1261740.002	1457880.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.524778008	1261770.002	1457880.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.541914999	1261740.002	1457850.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.534274995	1261770.002	1457850.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.547631979	1261740.002	1457820.005	176	2000	very high
NC	21400	Hexastylis naniflora	169	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	D	2-High	0.538052976	1261770.002	1457820.005	176	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.370361	1306260.002	1456590.005	214	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.475957006	1306230.002	1456560.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.494574994	1306260.002	1456560.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.414294988	1306290.002	1456560.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.575685978	1306200.002	1456530.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.526853979	1306230.002	1456530.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.575685978	1306260.002	1456530.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.446577996	1306290.002	1456530.005	214	2000	very high
NC	22216	Hexastylis naniflora	205	Dwarf-flowered Heartleaf	2000-10-03	2000-10-03	2000	Current	D	2-High	0.445780993	1306200.002	1456500.005	214	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.719887972	1265760.002	1445790.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.71606499	1265790.002	1445790.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.78421998	1265820.002	1445790.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.814401984	1265910.002	1445790.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.77403301	1265940.002	1445790.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.777622998	1265970.002	1445790.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.770328999	1265820.002	1445760.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.777558029	1265910.002	1445760.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.766797006	1265940.002	1445760.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.768612981	1265970.002	1445760.005	99	2000	very high
NC	22428	Hexastylis naniflora	249	Dwarf-flowered Heartleaf	2001-05-13	2001-05-13	2001-05-13	Current	A?	2-High	0.713829994	1265940.002	1445730.005	99	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.607694983	1269420.002	1451460.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.881412983	1269450.002	1451430.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.841530025	1269480.002	1451430.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.839963973	1269510.002	1451430.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.850268006	1269510.002	1451400.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.853298008	1269540.002	1451400.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.891979992	1269570.002	1451400.005	247	2000	very high
NC	8209	Hexastylis naniflora	56	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2001-04-06	Current	D	2-High	0.818527997	1269600.002	1451400.005	247	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.670906007	1268220.002	1447320.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.686731994	1268160.002	1447290.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.500675023	1267890.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.525722027	1267920.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.592637002	1267950.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.635334015	1267980.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.637299001	1268010.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.635334015	1268040.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.690609992	1268130.002	1447260.005	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.569305003	1267511.796	1446916.712	99	2000	very high
NC	17373	Hexastylis naniflora	10	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1981-05	Current	A	2-High	0.640110016	1267734.371	1446995.529	99	2000	very high
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.32783401	1332510.002	1527990.005	59	500	moderate
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.302451015	1332420.002	1527930.005	59	500	moderate
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.273986995	1332000.002	1527900.005	59	500	moderate
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.305139005	1332030.002	1527900.005	59	500	moderate
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.339356005	1332360.002	1527900.005	59	500	moderate
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.329259008	1332390.002	1527900.005	59	500	moderate
NC	4708	Hexastylis naniflora	59	Dwarf-flowered Heartleaf	2010-03-21	2010-03-21	2002-04-05	Current	C	2-High	0.255400002	1332420.002	1527900.005	59	500	moderate
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.279439986	1271790.002	1448580.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.683167994	1271820.002	1448580.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.673398972	1271850.002	1448580.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.767699003	1271790.002	1448550.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.641490996	1271820.002	1448550.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.773127019	1271760.002	1448520.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.771322012	1271790.002	1448520.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.378468007	1271820.002	1448520.005	247	2000	very high
NC	21404	Hexastylis naniflora	173	Dwarf-flowered Heartleaf	2005-04	2005-04	2003-05-04	Current	D	2-High	0.739439011	1271790.002	1448490.005	247	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.579118013	1305480.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.584976017	1305510.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.58693099	1305540.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.588886976	1305570.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.592803001	1305600.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.559122026	1305630.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.594762981	1305660.002	1487340.005	98	500	moderate
NC	13027	Hexastylis naniflora	3	Dwarf-flowered Heartleaf	2001-04-02	2001-04-02	1957-04-28	Current	D	2-High	0.600646973	1305690.002	1487340.005	98	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.138410002	1246110.002	1446210.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.354447991	1246170.002	1446180.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.362066001	1246230.002	1446150.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.362066001	1246260.002	1446120.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.370644003	1246290.002	1446090.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.366822988	1246320.002	1446060.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.332004994	1246350.002	1446030.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.358307987	1246440.002	1445910.005	287	500	moderate
NC	28582	Hexastylis naniflora	287	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2009-07-08	Current	AB	2-High	0.347622991	1246470.002	1445880.005	287	500	moderate
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.110303998	1354590.002	1520610.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.109748997	1354620.002	1520610.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.112241	1354560.002	1520580.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.101609997	1354590.002	1520580.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.102127001	1354620.002	1520580.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.114298999	1354650.002	1520580.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.086769603	1354560.002	1520550.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.050329801	1354590.002	1520550.005	306	99	low
NC	35871	Hexastylis naniflora	306	Dwarf-flowered Heartleaf	2015	2015	2015	Current	D	2-High	0.065958902	1354620.002	1520550.005	306	99	low
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.713234007	1335810.002	1494150.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.749671996	1335780.002	1494120.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.608030975	1335810.002	1494120.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.608030975	1335840.002	1494120.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.751525998	1335780.002	1494090.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.751525998	1335810.002	1494090.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.616815984	1335840.002	1494090.005	293	99	unknown
NC	29086	Hexastylis naniflora	293	Dwarf-flowered Heartleaf	2010?	2010?	2010?	Current	E	2-High	0.137737006	1335810.002	1494060.005	293	99	unknown
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.799605012	1295040.002	1456860.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.743893981	1295070.002	1456860.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.733421981	1295100.002	1456860.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.369576007	1295040.002	1456830.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.324681997	1295070.002	1456830.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.224803999	1295100.002	1456830.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.219571993	1295070.002	1456800.005	93	500	moderate
NC	3733	Hexastylis naniflora	35	Dwarf-flowered Heartleaf	2001-04-04	2001-04-04	1997-06-04	Current	D	2-High	0.218770996	1295100.002	1456800.005	93	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.00554191	1323900.002	1449690.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.081489101	1323930.002	1449690.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.081904002	1323960.002	1449690.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.019058701	1323900.002	1449660.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.075052299	1323930.002	1449660.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.0983482	1323960.002	1449660.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.019100999	1323900.002	1449630.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.077639997	1323930.002	1449630.005	296	500	moderate
NC	31900	Hexastylis naniflora	296	Dwarf-flowered Heartleaf	2012-03-16	2012-03-16	2012-03-16	Current	CD	2-High	0.099172004	1323960.002	1449630.005	296	500	moderate
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.514431	1303890.002	1461210.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.856850982	1303920.002	1461210.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.859816015	1303890.002	1461180.005	216	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.852172971	1303920.002	1461180.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.865653992	1303950.002	1461180.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.579267979	1303890.002	1461150.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.774769008	1303920.002	1461150.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.865653992	1303950.002	1461150.005	216	2000	very high
NC	22205	Hexastylis naniflora	198	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	1998-2000	Current	B	2-High	0.562609971	1303920.002	1461120.005	216	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.547133982	1269030.002	1447110.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.550971985	1269060.002	1447110.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.663922012	1268970.002	1447080.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.688059986	1269000.002	1447080.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.761014998	1269030.002	1447080.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.76284498	1268940.002	1447050.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.768307984	1268970.002	1447050.005	99	2000	very high
NC	20255	Hexastylis naniflora	90	Dwarf-flowered Heartleaf	2003-03-02	2003-03-02	2003-03-02	Current	D	2-High	0.757344007	1269000.002	1447050.005	99	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.810980976	1286550.002	1448190.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.815263987	1286580.002	1448190.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.808569014	1286610.002	1448190.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.80744499	1286640.002	1448190.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.811761975	1286520.002	1448160.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.808569014	1286550.002	1448160.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.802917004	1286580.002	1448160.005	100	2000	very high
NC	18569	Hexastylis naniflora	49	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001-02-04	Current	A	3-Medium	0.714134991	1286310.002	1448040.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.85651201	1283880.002	1448100.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.854331017	1283820.002	1448070.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.761003017	1283850.002	1448070.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.774815023	1283880.002	1448070.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.849188983	1283790.002	1448040.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.792187989	1283820.002	1448040.005	100	2000	very high
NC	22383	Hexastylis naniflora	235	Dwarf-flowered Heartleaf	2001	2001	2001	Current	CD	2-High	0.85917598	1283790.002	1448010.005	100	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.844604015	1273410.002	1446450.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.839923978	1273440.002	1446450.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.82801199	1273470.002	1446450.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.716010988	1273380.002	1446420.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.833586991	1273410.002	1446420.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.776193976	1273440.002	1446420.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.682959974	1273470.002	1446420.005	245	2000	very high
NC	21406	Hexastylis naniflora	175	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-13	Current	C	2-High	0.598461986	1273380.002	1446390.005	245	2000	very high
NC	36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	0.294203997	1266150.002	1452780.005	312	2000	very high
NC	36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	0.273434013	1266120.002	1452750.005	312	2000	very high
NC	36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	0.231141999	1266150.002	1452750.005	312	2000	very high
NC	36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	0.30370599	1266090.002	1452720.005	312	2000	very high
NC	36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	0.213052005	1266120.002	1452720.005	312	2000	very high
NC	36696	Hexastylis naniflora	312	Dwarf-flowered Heartleaf	2016-08-03	2016-08-03	2006-11-14	Current	A	2-High	0.231141999	1266150.002	1452720.005	312	2000	very high
NC	20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	0.413053989	1298790.002	1521150.005	77	1000	high
NC	20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	0.490348995	1298790.002	1521120.005	77	1000	high
NC	20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	0.515606999	1298760.002	1521090.005	77	1000	high
NC	20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	0.751806974	1298490.002	1521000.005	77	1000	high
NC	20238	Hexastylis naniflora	77	Dwarf-flowered Heartleaf	2013-05-15	2013-05-15	2000-04-12	Current	CD	2-High	0.762076974	1298520.002	1521000.005	77	1000	high
NC	30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	0.222849995	1305960.002	1512690.005	295	500	moderate
NC	30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	0.220265999	1305990.002	1512690.005	295	500	moderate
NC	30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	0.118069001	1305960.002	1512660.005	295	500	moderate
NC	30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	0.221802995	1305990.002	1512660.005	295	500	moderate
NC	30019	Hexastylis naniflora	294	Dwarf-flowered Heartleaf	2016-03-20	2016-03-20	2011-11-05	Current	Ci	2-High	0.211954996	1306020.002	1512660.005	295	500	moderate
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.317018002	1271220.002	1451610.005	247	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.387686014	1271400.002	1451370.005	247	2000	very high
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.372931004	1271310.002	1451340.005	247	2000	very high
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.402339011	1271340.002	1451340.005	247	2000	very high
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.399051994	1271370.002	1451340.005	247	2000	very high
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.384095013	1271250.002	1451310.005	247	2000	very high
NC	6668	Hexastylis naniflora	13	Dwarf-flowered Heartleaf	2005-05	2005-05	1977	Current	D	2-High	0.410629988	1271280.002	1451310.005	247	2000	very high
NC	22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	0.646570027	1285920.002	1448310.005	100	2000	very high
NC	22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	0.619744003	1285830.002	1448280.005	100	2000	very high
NC	22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	0.815747976	1285860.002	1448280.005	100	2000	very high
NC	22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	0.827763021	1285890.002	1448280.005	100	2000	very high
NC	22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	0.797095001	1285920.002	1448280.005	100	2000	very high
NC	22414	Hexastylis naniflora	246	Dwarf-flowered Heartleaf	2001	2001	2001	Current	D	2-High	0.774429023	1285860.002	1448250.005	100	2000	very high
NC	22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	0.599618018	1303590.002	1461840.005	216	2000	very high
NC	22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	0.591782987	1303620.002	1461840.005	216	2000	very high
NC	22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	0.589827001	1303650.002	1461840.005	216	2000	very high
NC	22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	0.589827001	1303680.002	1461840.005	216	2000	very high
NC	22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	0.593739986	1303710.002	1461840.005	216	2000	very high
NC	22204	Hexastylis naniflora	197	Dwarf-flowered Heartleaf	2000-11-01	2000-11-01	1998-2000	Current	A	2-High	0.621908009	1303740.002	1461810.005	216	2000	very high
NC	385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	0.613435984	1253130.002	1444920.005	23	2000	very high
NC	385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	0.621523976	1253130.002	1444890.005	23	2000	very high
NC	385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	0.603628993	1253130.002	1444860.005	23	2000	very high
NC	385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	0.607550025	1253130.002	1444830.005	23	2000	very high
NC	385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	0.622438014	1253130.002	1444800.005	23	2000	very high
NC	385	Hexastylis naniflora	23	Dwarf-flowered Heartleaf	2016-05-13	2016-05-13	1992-1993	Current	A	2-High	0.617595017	1253130.002	1444770.005	23	2000	very high
NC	24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	0.831802011	1304100.002	1494960.005	243	2000	very high
NC	24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	0.834999025	1304130.002	1494960.005	243	2000	very high
NC	24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	0.307094991	1304100.002	1494930.005	243	2000	very high
NC	24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	0.311199009	1304130.002	1494930.005	243	2000	very high
NC	24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	0.312577009	1304160.002	1494930.005	243	2000	very high
NC	24777	Hexastylis naniflora	270	Dwarf-flowered Heartleaf	2012-07	2012-07	2006	Current	C?	2-High	0.842872024	1304190.002	1494930.005	243	2000	very high
NC	22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	0.858299971	1290720.002	1511400.005	178	2000	very high
NC	22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	0.858299971	1290720.002	1511370.005	178	2000	very high
NC	22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	0.856814027	1290720.002	1511340.005	178	2000	very high
NC	22493	Hexastylis naniflora	256	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	C?r	2-High	0.758033991	1290720.002	1511310.005	178	2000	very high
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.114859	1295400.002	1507410.005	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.096382499	1295430.002	1507410.005	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.542050004	1295490.002	1507410.005	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.139296994	1295520.002	1507410.005	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.133077994	1295796.43	1507353.689	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.056764301	1295352.827	1507308.152	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.111135997	1295637.446	1507362.056	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.139947996	1295676.15	1507367.448	318	500	moderate
NC	37217	Hexastylis naniflora	318	Dwarf-flowered Heartleaf	2017-04	2017-04	2017-04	Current	C	2-High	0.123364002	1295363.403	1507333.356	318	500	moderate
NC	33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	0.231151	1292760.002	1465800.005	298	500	moderate
NC	33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	0.240605995	1292790.002	1465800.005	298	500	moderate
NC	33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	0.294750005	1292820.002	1465800.005	298	500	moderate
NC	33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	0.212110996	1292790.002	1465770.005	298	500	moderate
NC	33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	0.297396988	1292850.002	1465770.005	298	500	moderate
NC	33039	Hexastylis naniflora	298	Dwarf-flowered Heartleaf	2014-04-15	2014-04-15	2014-04-15	Current	C	2-High	0.302747011	1292880.002	1465770.005	298	500	moderate
NC	8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	0.128147006	1305690.002	1512750.005	295	500	moderate
NC	8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	0.070150703	1305720.002	1512750.005	295	500	moderate
NC	8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	0.130649999	1305660.002	1512720.005	295	500	moderate
NC	8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	0.068803102	1305690.002	1512720.005	295	500	moderate
NC	8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	0.129168004	1305660.002	1512690.005	295	500	moderate

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NC	8307	Hexastylis naniflora	21	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1994-04-12	Current	A	2-High	0.124279	1305660.002	1512660.005	295	500	moderate
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.613647997	1305870.002	1457070.005	214	2000	very high
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.608770013	1305900.002	1457070.005	214	2000	very high
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.608470023	1305840.002	1457040.005	214	2000	very high
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.630886972	1305870.002	1457040.005	214	2000	very high
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.693579972	1305780.002	1457010.005	214	2000	very high
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.58197701	1305810.002	1457010.005	214	2000	very high
NC	22214	Hexastylis naniflora	203	Dwarf-flowered Heartleaf	2007-04-10	2007-04-10	2000	Current	B	2-High	0.58197701	1305810.002	1456980.005	214	2000	very high
NC	22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	0.901903987	1290360.002	1511310.005	178	2000	very high
NC	22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	0.878132999	1290390.002	1511310.005	178	2000	very high
NC	22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	0.899478972	1290420.002	1511310.005	178	2000	very high
NC	22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	0.624961972	1290450.002	1511310.005	178	2000	very high
NC	22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	0.509958029	1290360.002	1511280.005	178	2000	very high
NC	22491	Hexastylis naniflora	254	Dwarf-flowered Heartleaf	2010-05-26	2010-05-26	2006-06	Current	D?r	2-High	0.817798018	1290390.002	1511280.005	178	2000	very high
NC	22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	0.655520022	1290630.002	1511430.005	178	2000	very high
NC	22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	0.778518021	1290660.002	1511430.005	178	2000	very high
NC	22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	0.657485008	1290630.002	1511400.005	178	2000	very high
NC	22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	0.708462	1290660.002	1511400.005	178	2000	very high
NC	22492	Hexastylis naniflora	255	Dwarf-flowered Heartleaf	2006-06	2006-06	2006-06	Current	D	2-High	0.630761027	1290600.002	1511370.005	178	2000	very high
NC	28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	0.58208102	1290450.002	1510350.005	178	2000	very high
NC	28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	0.812294006	1290360.002	1510320.005	178	2000	very high
NC	28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	0.810609996	1290390.002	1510320.005	178	2000	very high
NC	28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	0.803812981	1290420.002	1510320.005	178	2000	very high
NC	28343	Hexastylis naniflora	280	Dwarf-flowered Heartleaf	2009-04-07	2009-04-07	2008-06-12	Current	C	2-High	0.737587988	1290450.002	1510320.005	178	2000	very high
NC	21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	0.531940997	1288410.002	1479240.005	157	500	moderate
NC	21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	0.530040026	1288440.002	1479240.005	157	500	moderate
NC	21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	0.212193996	1288320.002	1479210.005	157	500	moderate
NC	21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	0.561273992	1288350.002	1479210.005	157	500	moderate
NC	21385	Hexastylis naniflora	157	Dwarf-flowered Heartleaf	2010-12-01	2010-12-01	2004-11-01	Current	AB	2-High	0.456874996	1288380.002	1479210.005	157	500	moderate
NC	20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	0.754791021	1270800.002	1448640.005	247	2000	very high
NC	20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	0.754157007	1270800.002	1448610.005	247	2000	very high
NC	20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	0.777263999	1270530.002	1448550.005	247	2000	very high
NC	20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	0.669008017	1270560.002	1448520.005	247	2000	very high
NC	20243	Hexastylis naniflora	80	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	0.75207603	1270737.027	1448589.652	247	2000	very high
NC	8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	0.494042009	1331970.002	1506570.005	96	2000	very high
NC	8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	0.666383028	1331910.002	1506540.005	96	2000	very high
NC	8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	0.57318902	1331940.002	1506540.005	96	2000	very high
NC	8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	0.616801023	1331850.002	1506510.005	96	2000	very high
NC	8495	Hexastylis naniflora	39	Dwarf-flowered Heartleaf	2002-04-18	2002-04-18	1996-06	Current	D	2-High	0.578969002	1331880.002	1506510.005	96	2000	very high
NC	36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	0.021056199	1288410.002	1494180.005	309	99	low
NC	36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	0.0279072	1288440.002	1494180.005	309	99	low
NC	36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	0.028108601	1288410.002	1494150.005	309	99	low
NC	36589	Hexastylis naniflora	309	Dwarf-flowered Heartleaf	2016-05-06	2016-05-06	2016-05-06	Current	D?	2-High	0.027311699	1288440.002	1494150.005	309	99	low
NC	19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	0.711143017	1322310.002	1480080.005	302	2000	very high
NC	19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	0.714976013	1322340.002	1480080.005	302	2000	very high
NC	19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	0.722836018	1322370.002	1480080.005	302	2000	very high
NC	19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	0.594713986	1322340.002	1480050.005	302	2000	very high
NC	19611	Hexastylis naniflora	47	Dwarf-flowered Heartleaf	2005-05-11	2005-05-11	1999-03-29	Current	D	2-High	0.620490015	1322370.002	1480050.005	302	2000	very high
NC	4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	0.787732005	1270380.002	1445100.005	99	2000	very high
NC	4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	0.689383984	1270410.002	1445100.005	99	2000	very high
NC	4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	0.813504994	1270230.002	1444980.005	99	2000	very high
NC	4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	0.801554024	1270260.002	1444950.005	99	2000	very high
NC	4172	Hexastylis naniflora	62	Dwarf-flowered Heartleaf	2002-04-21	2002-04-21	2002-02-02	Current	C	2-High	0.823319972	1270171.343	1444998.916	99	2000	very high
NC	4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	0.78333497	1266300.002	1443510.005	248	500	moderate

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	0.67928201	1266300.002	1443480.005	248	500	moderate
NC	4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	0.598812997	1266330.002	1443480.005	248	500	moderate
NC	4030	Hexastylis naniflora	54	Dwarf-flowered Heartleaf	2005-04-12	2014-05	2001-04-01	Current	D	2-High	0.67928201	1266330.002	1443450.005	248	500	moderate
NC	21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	0.267347008	1264530.002	1454910.005	177	2000	very high
NC	21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	0.584971011	1264500.002	1454880.005	177	2000	very high
NC	21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	0.573270977	1264530.002	1454880.005	177	2000	very high
NC	21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	0.596956015	1264440.002	1454850.005	177	2000	very high
NC	21395	Hexastylis naniflora	164	Dwarf-flowered Heartleaf	2016-05-11	2016-05-11	2005-03-31	Current	A	2-High	0.583018005	1264470.002	1454850.005	177	2000	very high
NC	13728	Hexastylis naniflora	34	Dwarf-flowered Heartleaf	2005-05-19	2005-05-19	1997-06-04	Current	D	2-High	0.903896987	1296300.002	1457250.005	93	500	moderate
NC	13728	Hexastylis naniflora	34	Dwarf-flowered Heartleaf	2005-05-19	2005-05-19	1997-06-04	Current	D	2-High	0.895529985	1296270.002	1457220.005	93	500	moderate
NC	13728	Hexastylis naniflora	34	Dwarf-flowered Heartleaf	2005-05-19	2005-05-19	1997-06-04	Current	D	2-High	0.894689977	1296240.002	1457190.005	93	500	moderate
NC	12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	0.604880989	1269330.002	1445130.005	99	2000	very high
NC	12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	0.565705001	1269360.002	1445130.005	99	2000	very high
NC	12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	0.611626029	1269300.002	1445100.005	99	2000	very high
NC	12925	Hexastylis naniflora	63	Dwarf-flowered Heartleaf	2001-07-31	2001-07-31	2001-07-31	Current	D	2-High	0.328646004	1269300.002	1445070.005	99	2000	very high
NC	5682	Hexastylis naniflora	16	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1977	Current	E	2-High	0.368497014	1264680.002	1455180.005	177	2000	very high
NC	5682	Hexastylis naniflora	16	Dwarf-flowered Heartleaf	2014-05-20	2014-05-20	1977	Current	E	2-High	0.370052993	1264710.002	1455150.005	177	2000	very high
NC	36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.605863988	1304970.002	1512810.005	295	500	moderate
NC	36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.618345976	1305000.002	1512780.005	295	500	moderate
NC	36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.176633	1304970.002	1512720.005	295	500	moderate
NC	36703	Hexastylis naniflora	314	Dwarf-flowered Heartleaf	2012	2012	2012	Current	E	2-High	0.175105006	1304970.002	1512690.005	295	500	moderate
NC	21397	Hexastylis naniflora	166	Dwarf-flowered Heartleaf	2005-03-31	2005-03-31	2005-03-31	Current	CD	2-High	0.487511009	1264530.002	1455900.005	177	2000	very high
NC	21397	Hexastylis naniflora	166	Dwarf-flowered Heartleaf	2005-03-31	2005-03-31	2005-03-31	Current	CD	2-High	0.401271999	1264560.002	1455900.005	177	2000	very high
NC	24776	Hexastylis naniflora	269	Dwarf-flowered Heartleaf	2007	2007	2006	Current	B	2-High	0.701411009	1303740.002	1494660.005	243	2000	very high
NC	24776	Hexastylis naniflora	269	Dwarf-flowered Heartleaf	2007	2007	2006	Current	B	2-High	0.662096977	1303710.002	1494630.005	243	2000	very high
NC	24776	Hexastylis naniflora	269	Dwarf-flowered Heartleaf	2007	2007	2006	Current	B	2-High	0.703644991	1303680.002	1494600.005	243	2000	very high
NC	20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	0.180245996	1263510.002	1456170.005	177	2000	very high
NC	20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	0.174123004	1263510.002	1456140.005	177	2000	very high
NC	20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	0.173278004	1263510.002	1456110.005	177	2000	very high
NC	20302	Hexastylis naniflora	107	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B	2-High	0.172437996	1263510.002	1456080.005	177	2000	very high
NC	21401	Hexastylis naniflora	170	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	C	2-High	0.48842901	1262730.002	1457760.005	176	2000	very high
NC	21401	Hexastylis naniflora	170	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	C	2-High	0.486595005	1262760.002	1457760.005	176	2000	very high
NC	21401	Hexastylis naniflora	170	Dwarf-flowered Heartleaf	2016-05-18	2016-05-18	2005-04-06	Current	C	2-High	0.48476401	1262790.002	1457760.005	176	2000	very high
NC	20354	Hexastylis naniflora	121	Dwarf-flowered Heartleaf	2004-05-15	2004-05-15	2004-05-15	Current	B	2-High	0.867326975	1267230.002	1446270.005	99	2000	very high
NC	20354	Hexastylis naniflora	121	Dwarf-flowered Heartleaf	2004-05-15	2004-05-15	2004-05-15	Current	B	2-High	0.86334002	1267230.002	1446240.005	99	2000	very high
NC	21386	Hexastylis naniflora	158	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	2001-05-07	Current	D	2-High	0.732609987	1300020.002	1498560.005	158	500	moderate
NC	21386	Hexastylis naniflora	158	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	2001-05-07	Current	D	2-High	0.789227009	1299960.002	1498530.005	158	500	moderate
NC	21386	Hexastylis naniflora	158	Dwarf-flowered Heartleaf	2016-05-24	2016-05-24	2001-05-07	Current	D	2-High	0.732609987	1300020.002	1498530.005	158	500	moderate
NC	34003	Hexastylis naniflora	300	Dwarf-flowered Heartleaf	2013-04	2013-04	2013-04	Current	D	2-High	0.062470902	1336830.002	1520190.005	300	99	low
NC	34003	Hexastylis naniflora	300	Dwarf-flowered Heartleaf	2013-04	2013-04	2013-04	Current	D	2-High	0.062795699	1336800.002	1520160.005	300	99	low
NC	34003	Hexastylis naniflora	300	Dwarf-flowered Heartleaf	2013-04	2013-04	2013-04	Current	D	2-High	0.193918005	1336830.002	1520160.005	300	99	low
NC	28199	Hexastylis naniflora	279	Dwarf-flowered Heartleaf	2009-04-20	2009-04-20	2009-04-20	Current	D?	2-High	0.908352017	1322430.002	1483680.005	279	99	low
NC	28199	Hexastylis naniflora	279	Dwarf-flowered Heartleaf	2009-04-20	2009-04-20	2009-04-20	Current	D?	2-High	0.895425022	1322430.002	1483650.005	279	99	low
NC	28199	Hexastylis naniflora	279	Dwarf-flowered Heartleaf	2009-04-20	2009-04-20	2009-04-20	Current	D?	2-High	0.907795012	1322460.002	1483650.005	279	99	low
NC	22400	Hexastylis naniflora	242	Dwarf-flowered Heartleaf	2005-05	2005-05	2005-05	Current	D	2-High	0.830003023	1302210.002	1495080.005	243	2000	very high
NC	22400	Hexastylis naniflora	242	Dwarf-flowered Heartleaf	2005-05	2005-05	2005-05	Current	D	2-High	0.831999004	1302240.002	1495080.005	243	2000	very high
NC	22400	Hexastylis naniflora	242	Dwarf-flowered Heartleaf	2005-05	2005-05	2005-05	Current	D	2-High	0.810387015	1302240.002	1495050.005	243	2000	very high
NC	32858	Hexastylis naniflora	297	Dwarf-flowered Heartleaf	2011	2011	2011	Current	CD	2-High	0.535811007	1292730.002	1449270.005	297	99	unknown
NC	32858	Hexastylis naniflora	297	Dwarf-flowered Heartleaf	2011	2011	2011	Current	CD	2-High	0.181260005	1292760.002	1449270.005	297	99	unknown
NC	26004	Hexastylis naniflora	275	Dwarf-flowered Heartleaf	2014-05-21	2014-05-21	2007-04-17	Current	C	2-High	0.115281001	1337100.002	1513560.005	275	500	moderate
NC	26004	Hexastylis naniflora	275	Dwarf-flowered Heartleaf	2014-05-21	2014-05-21	2007-04-17	Current	C	2-High	0.100580998	1337130.002	1513560.005	275	500	moderate
NC	26004	Hexastylis naniflora	275	Dwarf-flowered Heartleaf	2014-05-21	2014-05-21	2007-04-17	Current	C	2-High	0.08072	1337160.002	1513560.005	275	500	moderate
NC	7324	Hexastylis naniflora	37	Dwarf-flowered Heartleaf	2005	2005	1994-06	Current	C	2-High	0.878709018	1267050.002	1444590.005	99	2000	very high
NC	7324	Hexastylis naniflora	37	Dwarf-flowered Heartleaf	2005	2005	1994-06	Current	C	2-High	0.870370984	1267020.002	1444500.005	99	2000	very high

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	36693	Hexastylis naniflora	311	Dwarf-flowered Heartleaf	2016-08-04	2016-08-04	2007-11-28	Current	A	2-High	0.248705	1251450.002	1441920.005	311	500	moderate
NC	13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	0.465449989	1311030.002	1503030.005	252	500	moderate
NC	13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	0.127724007	1311060.002	1503030.005	252	500	moderate
NC	13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	0.753198981	1310910.002	1503000.005	252	500	moderate
NC	13542	Hexastylis naniflora	20	Dwarf-flowered Heartleaf	2007	2007	1993-08-06	Current	B	2-High	0.788065016	1310940.002	1503000.005	252	500	moderate
NC	21053	Hexastylis naniflora	122	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B?	2-High	0.179266006	1263630.002	1456290.005	177	2000	very high
NC	21053	Hexastylis naniflora	122	Dwarf-flowered Heartleaf	2008	2008	2003-04-29	Current	B?	2-High	0.124429002	1263570.002	1456260.005	177	2000	very high
NC	21396	Hexastylis naniflora	165	Dwarf-flowered Heartleaf	2005-04-05	2005-04-05	2005-04-05	Current	C	2-High	0.537446976	1263900.002	1455420.005	177	2000	very high
NC	21396	Hexastylis naniflora	165	Dwarf-flowered Heartleaf	2005-04-05	2005-04-05	2005-04-05	Current	C	2-High	0.612614989	1263900.002	1455390.005	177	2000	very high
NC	24748	Hexastylis naniflora	267	Dwarf-flowered Heartleaf	2006-07-06	2006-07-06	2006-07-06	Current	CD	2-High	0.799870014	1267650.002	1447920.005	99	2000	very high
NC	24748	Hexastylis naniflora	267	Dwarf-flowered Heartleaf	2006-07-06	2006-07-06	2006-07-06	Current	CD	2-High	0.842028975	1267680.002	1447920.005	99	2000	very high
NC	22199	Hexastylis naniflora	192	Dwarf-flowered Heartleaf	2000-10-27	2000-10-27	1998-2000	Current	C	2-High	0.760140002	1294350.002	1460520.005	217	2000	very high
NC	22199	Hexastylis naniflora	192	Dwarf-flowered Heartleaf	2000-10-27	2000-10-27	1998-2000	Current	C	2-High	0.743032992	1294272.001	1460526.397	217	2000	very high
NC	24749	Hexastylis naniflora	268	Dwarf-flowered Heartleaf	2006-07-06	2006-07-06	2006-07-06	Current	D	2-High	0.318064988	1267380.002	1447470.005	99	2000	very high
NC	22235	Hexastylis naniflora	212	Dwarf-flowered Heartleaf	2000-10-26	2000-10-26	1998-2000	Current	D	2-High	0.226468995	1304910.002	1458180.005	214	2000	very high
NC	21405	Hexastylis naniflora	174	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-03	Current	D	2-High	0.712642014	1270593.346	1448867.041	247	2000	very high
NC	9779	Hexastylis naniflora	53	Dwarf-flowered Heartleaf	2003-05	2003-05	2001-04-02	Current	D	2-High	0.328837007	1268400.002	1444860.005	99	2000	very high
NC	3553	Hexastylis naniflora	76	Dwarf-flowered Heartleaf	2015-05-19	2015-05-19	2004-05-03	Current	BC	2-High	0.658973992	1273710.002	1443240.005	99	2000	very high
NC	3553	Hexastylis naniflora	76	Dwarf-flowered Heartleaf	2015-05-19	2015-05-19	2004-05-03	Current	BC	2-High	0.774775028	1273726.806	1443170.59	99	2000	very high
NC	22387	Hexastylis naniflora	239	Dwarf-flowered Heartleaf	2012-03-28	2012-03-28	2001	Current	D	2-High	0.745696008	1286220.002	1448340.005	100	2000	very high
NC	21403	Hexastylis naniflora	172	Dwarf-flowered Heartleaf	2012-03-12	2012-03-12	2003-05-14	Current	D	2-High	0.745675981	1273686.203	1442978.818	99	2000	very high
NC	37214	Hexastylis naniflora	315	Dwarf-flowered Heartleaf	2017-05-02	2017-05-02	2016-05-05	Current	D	2-High	0.733089983	1310880.002	1517040.005	316	1000	high
NC	20256	Hexastylis naniflora	91	Dwarf-flowered Heartleaf	2012-07	2012-07	2003-03-13	Current	D	2-High	0.663347006	1272424.1	1445950.524	245	2000	very high
NC	37216	Hexastylis naniflora	317	Dwarf-flowered Heartleaf	2017-05-02	2017-05-02	2016-05-05	Current	D	2-High	0.227891997	1311120.002	1518540.005	317	99	low
NC	22394	Hexastylis naniflora	240	Dwarf-flowered Heartleaf	2012-05-17	2012-05-17	2001	Historical	F	2-High	0.846042991	1285920.002	1450260.005	100	2000	very high
NC	33240	Hexastylis naniflora	299	Dwarf-flowered Heartleaf	2014-04-01	2014-04-01	2010-04-13	Current	D	2-High	0.177424997	1329040.518	1479040.687	299	99	low
NC	33240	Hexastylis naniflora	299	Dwarf-flowered Heartleaf	2014-04-01	2014-04-01	2010-04-13	Current	D	2-High	0.391653001	1329061.952	1479050.257	299	99	low
NC	21393	Hexastylis naniflora	162	Dwarf-flowered Heartleaf	2012-12-17	2012-12-17	2005-Fall	Current	D	2-High	0.187804997	1314527.879	1509098.456	179	2000	very high
NC	20333	Hexastylis naniflora	114	Dwarf-flowered Heartleaf	2010-01-27	2010-01-27	2003-05-03	Current	D	2-High	0.734135985	1270699.913	1448904.6	247	2000	very high
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.716103971	1277220.002	1437840.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.319674999	1277100.002	1437660.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.322490007	1277130.002	1437660.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.713163018	1277160.002	1437660.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.32457	1277130.002	1437630.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.686896026	1276680.002	1437240.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.684948981	1276710.002	1437240.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.659170985	1276740.002	1437240.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.202700004	1276770.002	1437240.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.696844995	1276680.002	1437210.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.725637019	1278240.002	1436670.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.71035099	1277340.002	1436640.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.712270975	1277370.002	1436640.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.718666971	1278210.002	1436640.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.698541999	1277430.002	1436610.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.716103971	1277460.002	1436610.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.719926	1277490.002	1436610.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.725637019	1278210.002	1436610.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.719926	1277610.002	1436580.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.718666971	1278180.002	1436580.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.728416026	1278150.002	1436550.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.493173987	1278180.002	1436550.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.717778027	1278150.002	1436520.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.483814001	1278150.002	1436490.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.491346985	1278120.002	1436460.005	3	2000	Very High

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.482003003	1278150.002	1436460.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.485628992	1278120.002	1436430.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.403299004	1278150.002	1436430.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.496838003	1278090.002	1436400.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.485628992	1278120.002	1436400.005	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.333936989	1278270.201	1436724.456	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.723735988	1277685.605	1436515.531	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.721872985	1277721.636	1436459.279	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.308423012	1276596.647	1437170.269	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.22281	1276574.931	1437154.523	3	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.703342021	1267590.002	1432770.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.704586983	1267620.002	1432770.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.533393025	1268640.002	1432710.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.694410026	1267440.002	1432680.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.69156599	1267350.002	1432620.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.812223971	1268850.002	1432560.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.328658998	1266840.002	1432500.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.684677005	1271700.002	1432410.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.59740001	1271700.002	1432380.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.624197006	1271790.002	1432260.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.54698801	1271820.002	1432260.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.421312004	1271400.002	1432200.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.409595996	1271430.002	1432200.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.721213996	1269630.002	1432050.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.536931992	1271580.002	1432020.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.595227003	1271610.002	1431960.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.630172014	1271670.002	1431930.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.504938006	1271700.002	1431930.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.390439004	1269090.002	1431900.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.812223971	1269180.002	1431870.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.713437974	1269150.002	1431840.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.728721023	1269270.002	1431840.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.801818013	1269270.002	1431810.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.321491987	1270290.002	1431630.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.319435	1270290.002	1431600.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.614543974	1271070.002	1431270.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.51494801	1271140.904	1431243.357	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.392729998	1271839.979	1431852.731	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.460646003	1270216.76	1432005.233	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.422847986	1268998.768	1431858.019	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.630293012	1269732.547	1432051.766	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.730363011	1269564.774	1432059.834	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.703251004	1269481.884	1432095.536	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.764190018	1271264.686	1432760.98	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.723635018	1266022.481	1431931.821	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.780157983	1268915.107	1432552.503	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.733242989	1271107.627	1432924.401	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.642969012	1271031.368	1432948.706	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.607770026	1268683.268	1432764.414	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.645066977	1266565.594	1432449.253	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.640946984	1266608.648	1432473.057	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.690257013	1268021.215	1432781.926	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.701218009	1267887.858	1432778.852	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.611715019	1273980.002	1428660.005	1	2000	Very High

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SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.607918024	1274100.002	1428660.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.626619995	1273980.002	1428630.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.612942994	1274010.002	1428630.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.614171982	1274070.002	1428630.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.607918024	1274100.002	1428630.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.624073982	1273980.002	1428600.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.580762982	1274070.002	1428570.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.79382199	1273590.002	1427520.005	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.818481028	1273632.548	1427581.4	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.575430989	1274067.796	1428432.046	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.734013021	1272673.576	1428410.354	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.660341024	1271866.924	1429582.397	1	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.396959007	1274700.002	1421520.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.29806301	1274700.002	1421490.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.368039012	1274670.002	1421430.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.301452011	1274460.002	1421340.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.215278998	1274460.002	1421310.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.26809001	1274460.002	1421280.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.615503013	1274940.002	1421280.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.647014022	1275000.002	1421280.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.632743001	1275030.002	1421280.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.581062973	1275060.002	1421280.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.520690978	1275090.002	1421280.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.318221003	1274490.002	1421250.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.60155201	1274850.002	1421250.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.702921987	1274880.002	1421250.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.709164023	1274910.002	1421250.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.610521972	1274970.002	1421250.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.608861983	1275000.002	1421250.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.603175998	1274520.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.609751999	1274550.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.320820004	1274580.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.320820004	1274610.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.263047993	1274820.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.587342978	1274850.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.610521972	1274880.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.634283006	1274910.002	1421220.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.293242991	1274520.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.60295701	1274550.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.619768977	1274580.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.313771993	1274610.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.313226998	1274640.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.298815995	1274670.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.305346996	1274820.002	1421190.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.619768977	1274670.002	1421160.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.623462975	1274700.002	1421160.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.325500995	1274730.002	1421160.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.65267998	1274760.002	1421160.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.674583018	1274790.002	1421160.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.609751999	1274820.002	1421160.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.665633023	1274730.002	1421130.005	2	2000	Very High
SC		Hexastylis naniflora		Dwarf-flowered Heartleaf							0.674709022	1274760.002	1421130.005	2	2000	Very High
NC	37915	Hexastylis naniflora	319	Dwarf-flowered Heartleaf							0.835763991	1273499.852	1443293.951	99	2000	very high
NC	37916	Hexastylis naniflora	320	Dwarf-flowered Heartleaf							0.916894019	1299526.67	1456756.853	320	99	low

State	EO_ID	SCI_NAME	EO_NUM	COM_NAME	SURVEYDATE	LAST_OBS	FIRST_OBS	EO_STATUS	EO_RANK	ACCURACY	Maxent Score	X	Y	PopNumber	EstPlantsMax	Resilience
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.660769999	1295700.002	1520370.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.158732995	1295760.002	1520370.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.914484978	1295910.002	1520370.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.914484978	1295940.002	1520370.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.653447986	1295700.002	1520340.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.154902995	1295760.002	1520340.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.40802899	1295940.002	1520340.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.396299988	1295970.002	1520340.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.360368997	1295970.002	1520310.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.127737001	1295880.002	1520280.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.67366302	1296510.002	1520040.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.733918011	1296510.002	1520010.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.310393006	1296510.002	1519980.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.732119977	1296540.002	1519980.005	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.193808004	1295426.793	1520604.93	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.243605003	1295593.69	1520610.39	321	2000	very high
NC	37929	Hexastylis naniflora	321	Dwarf-flowered Heartleaf							0.812672019	1295624.527	1520617.147	321	2000	very high
SC											0.00477683	1240369.49	1419083.964	4	99	low
SC											0.00595996	1240676.032	1419026.488	4	99	low
SC											0.00251037	1225042.373	1411324.612	5	99	low

From: Matt Estep
To: Marshall, Michael E
Cc: Reid, Rebekah N
Subject: Re: Elicitation Questions
Date: Monday, February 26, 2018 10:26:23 PM
Importance: High

Hi Mike

I was able to speak with my collaborator today and was given permission to provide you the GPS coordinates you requested. I will organize the information tomorrow and send it before the end of business. I am sorry for the long delay, it has been a very busy semester.

Matt

On Wed, Jan 31, 2018 at 9:55 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hi Matt,
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questions to the best of your ability by next Friday (1/26/18).

I am currently drafting the Species Biology and Species Needs portions of the SSA, and should have that wrapped up by 1/29/18 for your review, though the elicitation questions will help in that drafting, so if you could get me your answers asap, I'd greatly appreciate it.

Thanks, and have a great weekend!

Mike

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Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
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From: Marshall, Michael E
To: Matt Estep
Cc: Reid, Rebekah N
Subject: Re: Elicitation Questions
Date: Tuesday, February 27, 2018 8:59:07 AM
Importance: High

Hi Matt,

No problem at all....understood. Appreciate all of your help!

Mike

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From: Matt Estep
To: Marshall, Michael E
Cc: Reid, Rebekah N
Subject: Re: Elicitation Questions
Date: Tuesday, February 27, 2018 10:15:38 AM
Attachments: Hexastylis_genetic ID_locality.xlsx
Importance: High

Hi Mike

Attached. Yell if you have any questions.

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ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
2	Hexastylis naniflora	NC 16	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978
2	Hexastylis naniflora	SC 18 (Cowpens 2)	Not processed per agreement with Plaintiff/Requester		287	SC	Cherokee	28972
2	Hexastylis naniflora	NC 233	Not processed per agreement with Plaintiff/Requester		223	NC	Cleveland	
2	Hexastylis naniflora	NC 233	Not processed per agreement with Plaintiff/Requester		223	NC	Cleveland	
2	Hexastylis naniflora	NC 274	Not processed per agreement with Plaintiff/Requester		214	NC	Cleveland	
2	Hexastylis naniflora	NC 274	Not processed per agreement with Plaintiff/Requester		214	NC	Cleveland	
2	Hexastylis naniflora	NC 233	Not processed per agreement with Plaintiff/Requester		223	NC	Cleveland	
2	Hexastylis naniflora	NC 233	Not processed per agreement with Plaintiff/Requester		223	NC	Cleveland	
2	Hexastylis naniflora	NC NoEO2	Not processed per agreement with Plaintiff/Requester		241	NC	Cleveland	28976
2	Hexastylis naniflora	NC NoEO2	Not processed per agreement with Plaintiff/Requester		241	NC	Cleveland	28976
2	Hexastylis naniflora	NC NoEO2	Not processed per agreement with Plaintiff/Requester		241	NC	Cleveland	28976
2	Hexastylis naniflora	SC 17 (Cowpens 1)	Not processed per agreement with Plaintiff/Requester		275	SC	Cherokee	28971
2	Hexastylis naniflora	SC 17 (Cowpens 1)	Not processed per agreement with Plaintiff/Requester		275	SC	Cherokee	28971
2	Hexastylis naniflora	SC 17 (Cowpens 1)	Not processed per agreement with Plaintiff/Requester		275	SC	Cherokee	28971

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
2	Hexastylis naniflora	NC 287 (Carr- McIntyre)	Not processed per agreement with Plaintiff/Requester		336	NC	Polk	
2	Hexastylis naniflora	SC 13	Not processed per agreement with Plaintiff/Requester		244	SC	Spartanburg	
2	Hexastylis naniflora	NC 184	Not processed per agreement with Plaintiff/Requester		267	NC	Catawba	28980
2	Hexastylis naniflora	NC 184	Not processed per agreement with Plaintiff/Requester		267	NC	Catawba	28980
2	Hexastylis naniflora	SC 18 (Cowpens 2)	Not processed per agreement with Plaintiff/Requester		287	SC	Cherokee	28972
2	Hexastylis naniflora	NC 158	Not processed per agreement with Plaintiff/Requester		324	NC	Catawba	28967
2	Hexastylis naniflora	SC 18 (Cowpens 2)	Not processed per agreement with Plaintiff/Requester		287	SC	Cherokee	28972
2	Hexastylis naniflora	NC 287 (Carr- McIntyre)	Not processed per agreement with Plaintiff/Requester		336	NC	Polk	
2	Hexastylis naniflora	SC 55	Not processed per agreement with Plaintiff/Requester		239	SC	Spartanburg	28987
2	Hexastylis naniflora	NC 287 (Carr- McIntyre)	Not processed per agreement with Plaintiff/Requester		336	NC	Polk	
2	Hexastylis naniflora	NC 172	Not processed per agreement with Plaintiff/Requester		241	NC	Rutherford	28983
2	Hexastylis naniflora	NC 172	Not processed per agreement with Plaintiff/Requester		241	NC	Rutherford	28983
2	Hexastylis naniflora	SC 13	Not processed per agreement with Plaintiff/Requester		244	SC	Spartanburg	
2	Hexastylis naniflora	SC 54	Not processed per agreement with Plaintiff/Requester		298	SC	Spartanburg	

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
2	Hexastylis naniflora	NC 208	Not processed per agreement with Plaintiff/Requester		251	NC	Rutherford	29011
2	Hexastylis naniflora	NC 149	Not processed per agreement with Plaintiff/Requester		219	NC	Cleveland	28975
2	Hexastylis naniflora	NC 149	Not processed per agreement with Plaintiff/Requester		219	NC	Cleveland	28975
2	Hexastylis naniflora	NC 149	Not processed per agreement with Plaintiff/Requester		219	NC	Cleveland	28975
2	Hexastylis naniflora	NC 107	Not processed per agreement with Plaintiff/Requester		282	NC	Rutherford	28988
2	Hexastylis naniflora	NC 107	Not processed per agreement with Plaintiff/Requester		282	NC	Rutherford	28988
2	Hexastylis naniflora	NC 107	Not processed per agreement with Plaintiff/Requester		282	NC	Rutherford	28988
2	Hexastylis naniflora	SC 20	Not processed per agreement with Plaintiff/Requester		228	SC	Spartanburg	28985
2	Hexastylis naniflora	SC 53	Not processed per agreement with Plaintiff/Requester		231	SC	Spartanburg	28986
2	Hexastylis naniflora	NC 285 (NC Pine)	Not processed per agreement with Plaintiff/Requester		363	NC	Burke	28979
2	Hexastylis naniflora	NC 285 (NC Pine)	Not processed per agreement with Plaintiff/Requester		363	NC	Burke	28979
2	Hexastylis naniflora	SC EO 21	Not processed per agreement with Plaintiff/Requester		245	SC	Spartanburg	
2	Hexastylis naniflora	SC EO 20	Not processed per agreement with Plaintiff/Requester		228	SC	Spartanburg	28985
2	Hexastylis naniflora	NC 047	Not processed per agreement with Plaintiff/Requester		267	NC	Lincoln	

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
2	Hexastylis naniflora	NC 047	Not processed per agreement with Plaintiff/Requester		267	NC	Lincoln	
2	Hexastylis naniflora	SC 56	Not processed per agreement with Plaintiff/Requester			SC	Spartanburg	29014
2	Hexastylis naniflora	NC 186 & NC 286	Not processed per agreement with Plaintiff/Requester			NC	Rutherford	29028
2	Hexastylis naniflora	NC 186 & NC 286	Not processed per agreement with Plaintiff/Requester			NC	Rutherford	29028
2	Hexastylis naniflora	SC 21	Not processed per agreement with Plaintiff/Requester		245	SC	Spartanburg	
2	Hexastylis naniflora	SC 36	Not processed per agreement with Plaintiff/Requester		283	SC	Spartanburg	
2	Hexastylis naniflora	SC 55	Not processed per agreement with Plaintiff/Requester		239	SC	Spartanburg	28987
2	Hexastylis naniflora	SC 21	Not processed per agreement with Plaintiff/Requester		245	SC	Spartanburg	
2	Hexastylis naniflora	SC 19	Not processed per agreement with Plaintiff/Requester		246	SC	Spartanburg	28984
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2	Hexastylis naniflora	NC 231	Not processed per agreement with Plaintiff/Requester		243	NC	Cleveland	28977
2	Hexastylis naniflora	NC 271	Not processed per agreement with Plaintiff/Requester		323	NC	Lincoln	
2	Hexastylis naniflora	NC 073	Not processed per agreement with Plaintiff/Requester		216	NC	Cleveland	28982
2	Hexastylis naniflora	NC 073	Not processed per agreement with Plaintiff/Requester		216	NC	Cleveland	28982
2	Hexastylis naniflora	NC 073	Not processed per agreement with Plaintiff/Requester		216	NC	Cleveland	28982
2	Hexastylis naniflora	NC 213	Not processed per agreement with Plaintiff/Requester		240	NC	Cleveland	28989
2	Hexastylis naniflora	Baker Mtn	Not processed per agreement with Plaintiff/Requester		402	NC	Catawba	29027
2	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
2	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
2	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
2	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
2	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
2	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	

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2	Hexastylis naniflora	NC 070 - Murrell 6883	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
2	Hexastylis nanilfora	NC 130 (Polk Co. Harris)	Not processed per agreement with Plaintiff/Requester		261	NC	Polk	
2	Hexastylis nanilfora	NC 130 (Polk Co. Harris)	Not processed per agreement with Plaintiff/Requester		261	NC	Polk	
2	Hexastylis nanilfora	NC 130 (Polk Co. Harris)	Not processed per agreement with Plaintiff/Requester		261	NC	Polk	
2	Hexastylis nanilfora	NC 130 (Polk Co. Harris)	Not processed per agreement with Plaintiff/Requester		261	NC	Polk	
2	Hexastylis nanilfora	DOT 36	Not processed per agreement with Plaintiff/Requester		362	NC	Caldwell	28968
2	Hexastylis spp.	DOT 22A	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
2	Hexastylis spp.	NC 77B	Not processed per agreement with Plaintiff/Requester		338	NC	Caldwell	29010
2	Hexastylis spp.	DOT 52 A	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	28999
2	Hexastylis spp.	Buffalo Shoals New Sterling N	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29004
2	Hexastylis spp.	valdese #2 p-4	Not processed per agreement with Plaintiff/Requester			NC		
2	Hexastylis spp.	Valdese #1 p-5	Not processed per agreement with Plaintiff/Requester			NC		
3	Hexastylis naniflora	NC 16	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978
3	Hexastylis naniflora	NC 16	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis naniflora	NC 274	Not processed per agreement with Plaintiff/Requester		214	NC	Cleveland	
3	Hexastylis naniflora	NC 274	Not processed per agreement with Plaintiff/Requester		214	NC	Cleveland	
3	Hexastylis naniflora	NC 060	Not processed per agreement with Plaintiff/Requester		306	NC	Lincoln	28974
3	Hexastylis naniflora	NC 159	Not processed per agreement with Plaintiff/Requester		267	NC	Catawba	28980
3	Hexastylis naniflora	NC 021	Not processed per agreement with Plaintiff/Requester			NC	Burke	
3	Hexastylis naniflora	NC 021	Not processed per agreement with Plaintiff/Requester			NC	Burke	
3	Hexastylis naniflora	NC 020	Not processed per agreement with Plaintiff/Requester		279	NC	Catawba	28973
3	Hexastylis naniflora	NC 016	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978
3	Hexastylis naniflora	NC 059 Hunter's Ridge	Not processed per agreement with Plaintiff/Requester		293	NC	Alexander	28964
3	Hexastylis naniflora	NC 059 Hunter's Ridge	Not processed per agreement with Plaintiff/Requester		293	NC	Alexander	28964
3	Hexastylis naniflora	NC 158	Not processed per agreement with Plaintiff/Requester		324	NC	Catawba	28967
3	Hexastylis naniflora	NC 158	Not processed per agreement with Plaintiff/Requester		324	NC	Catawba	28967
3	Hexastylis naniflora	NC 275 (Buffal Shoals Eufola Rd.)	Not processed per agreement with Plaintiff/Requester		237	NC	Iredell	29019
3	Hexastylis naniflora	NC 275 (Buffal Shoals Eufola Rd.)	Not processed per agreement with Plaintiff/Requester		237	NC	Iredell	29019

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis naniflora	NC 275 (Buffal Shoals Eufola Rd.)	Not processed per agreement with Plaintiff/Requester		237	NC	Iredell	29019
3	Hexastylis naniflora	NC 16	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978
3	Hexastylis naniflora	NC 291	Not processed per agreement with Plaintiff/Requester		365	NC	Catawba	28966
3	Hexastylis naniflora	NC 291	Not processed per agreement with Plaintiff/Requester		365	NC	Catawba	28966
3	Hexastylis naniflora	NC 259	Not processed per agreement with Plaintiff/Requester		245	NC	Lincoln	28970
3	Hexastylis naniflora	NC 271	Not processed per agreement with Plaintiff/Requester		323	NC	Lincoln	
3	Hexastylis naniflora	NC 016	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978
3	Hexastylis naniflora	NC 077	Not processed per agreement with Plaintiff/Requester		338	NC	Caldwell	
3	Hexastylis naniflora	NC 077	Not processed per agreement with Plaintiff/Requester		338	NC	Caldwell	
3	Hexastylis naniflora	Baker Mtn	Not processed per agreement with Plaintiff/Requester		402	NC	Catawba	29027
3	Hexastylis naniflora	Baker Mtn	Not processed per agreement with Plaintiff/Requester		402	NC	Catawba	29027
3	Hexastylis naniflora	Baker Mtn	Not processed per agreement with Plaintiff/Requester		402	NC	Catawba	29027
3	Hexastylis naniflora	NC 016	Not processed per agreement with Plaintiff/Requester		337	NC	Burke	28978
3	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
3	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
3	Hexastylis naniflora	NewEO Murrell 6682	Not processed per agreement with Plaintiff/Requester			NC	Cleveland	
3	Hexastylis naniflora	NC 015	Not processed per agreement with Plaintiff/Requester		337	NC		
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	Buffalo Shoals New Sterling N	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29004
3	Hexastylis spp.	MDI tract 1	Not processed per agreement with Plaintiff/Requester		397	NC	Caldwell	29006
3	Hexastylis spp.	MDI tract 1	Not processed per agreement with Plaintiff/Requester		397	NC	Caldwell	29006
3	Hexastylis spp.	MDI tract 1	Not processed per agreement with Plaintiff/Requester		397	NC	Caldwell	29006
3	Hexastylis spp.	MDI tract 1	Not processed per agreement with Plaintiff/Requester		397	NC	Caldwell	29006
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 52B	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	29000

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis spp.	DOT 52B	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	29000
3	Hexastylis spp.	DOT 52B			298	NC	Caldwell	29000
3	Hexastylis spp.	River Rd			346	NC	Burke	29007
3	Hexastylis spp.	River Rd			346	NC	Burke	29007
3	Hexastylis spp.	River Rd			346	NC	Burke	29007
3	Hexastylis spp.	Buffalo Shoals New Sterling N			262	NC	Iredell	29004
3	Hexastylis spp.	Buffalo Shoals New Sterling N			262	NC	Iredell	29004
3	Hexastylis spp.	Buffalo Shoals New Sterling N			262	NC	Iredell	29004
3	Hexastylis spp.	Lambert Fork Rd				NC	Alexander	
3	Hexastylis spp.	Gill Childers Rd				NC	Alexander	
3	Hexastylis spp.	NC 77			338	NC	Caldwell	29009
3	Hexastylis spp.	MDI tract 1			397	NC	Caldwell	29006
3	Hexastylis spp.	DOT 32				NC	Catawba	
3	Hexastylis spp.	DOT 30				NC	Catawba	29002

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29002
3	Hexastylis spp.	DOT 22A	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	DOT 22A	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	DOT 22A	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	DOT 30	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29002
3	Hexastylis spp.	DOT 30	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29002
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis spp.	DOT 37	Not processed per agreement with Plaintiff/Requester			NC	Catawba	28998
3	Hexastylis spp.	DOT 22	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	DOT 24	Not processed per agreement with Plaintiff/Requester		365	NC	Caldwell	
3	Hexastylis spp.	NC 77B	Not processed per agreement with Plaintiff/Requester		338	NC	Caldwell	29010
3	Hexastylis spp.	Buffalo Shoals New Sterling N	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29004
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 32	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 52 A	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	28999
3	Hexastylis spp.	DOT 52 A	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	28999
3	Hexastylis spp.	DOT 52 A	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	28999
3	Hexastylis spp.	NC 77	Not processed per agreement with Plaintiff/Requester		338	NC	Caldwell	29009
3	Hexastylis spp.	NC 77	Not processed per agreement with Plaintiff/Requester		338	NC	Caldwell	29009
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29003
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29003
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29003
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29003
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29003
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29003
3	Hexastylis spp.	DOT 52B	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	29000
3	Hexastylis spp.	DOT 52B	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	29000
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	Buffalo Shoals New Sterling S	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29005
3	Hexastylis spp.	Buffalo Shoals New Sterling S	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29005
3	Hexastylis spp.	Buffalo Shoals New Sterling N	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29004
3	Hexastylis spp.	Buffalo Shoals New Sterling N	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29004
3	Hexastylis spp.	Buffalo Shoals New Sterling S	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29005
3	Hexastylis spp.	Buffalo Shoals New Sterling S	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29017, 29005
3	Hexastylis spp.	DOT 22A and 22	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	DOT 22A and 22	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	Buffalo Shoals New Sterling S	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29017, 29005
3	Hexastylis spp.	DOT 22A and 22	Not processed per agreement with Plaintiff/Requester		354	NC	Caldwell	29001
3	Hexastylis spp.	Buffalo Shoals New Sterling S	Not processed per agreement with Plaintiff/Requester		262	NC	Iredell	29017, 29005
3	Hexastylis spp.	DOT 30	Not processed per agreement with Plaintiff/Requester			NC	Catawba	29002
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008

ID (Genetic)	Field ID (Species)	Site ID	Latitude	Longitude	Elevation	State	County	Accession #
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 52B	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	29000
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 52A	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	28999
3	Hexastylis spp.	DOT 52A	Not processed per agreement with Plaintiff/Requester		298	NC	Caldwell	28999
3	Hexastylis spp.	DOT 51	Not processed per agreement with Plaintiff/Requester		309	NC	Caldwell	29008
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	DOT 48	Not processed per agreement with Plaintiff/Requester			NC	Catawba	
3	Hexastylis spp.	valdese #1 p-2	Not processed per agreement with Plaintiff/Requester			NC		
3	Hexastylis spp.	Valdese #2 p-2	Not processed per agreement with Plaintiff/Requester			NC		
3	Hexastylis spp.	Valdese #2 p-4	Not processed per agreement with Plaintiff/Requester			NC		
3	Hexastylis spp.	Valdese +1 p-3	Not processed per agreement with Plaintiff/Requester			NC		

	Missing data
Genetic identification - structure	
H. naniflora	2
H. catabawensis (new species)	3
Field ID is problematic	

From: Marshall, Michael E
To: Reid, Rebekah N; Endries, Mark
Subject: SC Population questions
Date: Thursday, March 29, 2018 1:26:57 PM
Importance: High

Hi Rebekah,

I have some questions about tracking population numbers....particularly the SC populations:

You produced a list of populations that had various levels of protection....what populations are 1, 2, and 3.

Also, do we have population numbers for the following? So I can track them on the Maxent and Sleuth outputs.

Rock Barn Solar Farm
Taylor Blaylock Res
Boulder Creek Subdivision
Gateway Elementary School

Thanks!

Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
Monday-Thursday --> In Office 7:30-4:30 CST

Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act and may be disclosed to third parties.

From: Endries, Mark
To: Marshall, Michael E
Cc: Reid, Rebekah N
Subject: Re: SC Population questions
Date: Thursday, March 29, 2018 1:40:04 PM
Attachments: HENA SCNHP EO Data Summary_mem RNR Comments.xlsx
Importance: High

Hi Mike,

Populations 1,2, and 3 are South Carolina populations.

Taylor Blaylock is #1
DNR Peters Creek Heritage Preserve is #2
Cowpens NBF - Site 1 is #3
Boulder Creek Subdivision is #4
Gateway Elementary School is #5.

This info is in the spreadsheet I've attached. Populations 4 and 5 are points only and therefore are not included in the area summaries I put together.

Thanks!

Mark

Mark Endries
USFWS
160 Zillicoa St
Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

On Thu, Mar 29, 2018 at 1:26 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hi Rebekah,
>
> I have some questions about tracking population numbers....particularly the SC populations:
>
> You produced a list of populations that had various levels of protection....what populations are 1, 2, and 3.
>
> Also, do we have population numbers for the following? So I can track them on the Maxent and Sleuth outputs.
>
> | |
> |---|
> | Rock Barn Solar Farm |
> | Taylor Blaylock Res |
> | Boulder Creek Subdivision |
> | Gateway Elementary School |
>
> Thanks!
>
> Mike

--
Mike Marshall
SSA Program Specialist
U.S. Fish and Wildlife Service Region 4
Cell: 512-461-6217
Alternate email: mmarshall@ag.tamu.edu

Work Schedule 1st Week
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Work Schedule 2nd Week
Monday-Thursday --> In Office 7:30-4:30 CST

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Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
1	3	3852	H	Beaverdam Creek/3 mi east of Travelers Rest				1964	2009	GREE			
1	5	7689	CD	Sagittaria Hydrology Site		150	200	1991	2008	GREE			Doug Rayner (Wofford College) - emailed 12/12/17
1	6	1160	CD	Junction of SSR173 and SSR 262		75	100	1991	2008	GREE			
1	8	4875	BD	UT Beaverdam Creek/S-903		150		1991	2008	GREE			
1	15	1713	AC	DNR Bunched Arrowhead Preserve		1		1991	2010	GREE	Y	DNR Bunched Arrowhead Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
1	52	730	AC	DNR Belvue Springs Heritage Preserve		?		1999	2008	GREE		"numerous clumps", DNR Belvue Springs HP. Is this the same as the Bunched Arrowhead Preserve?	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
2	10	7931	H?	UT Enoree River				1985	2010	GREE			
2	51	6287	BC	DNR Clear Creek Heritage Preserve		1		1999	2008	GREE	Y	DNR Clear Creek Heritage Preserve	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
3	22	1649	BD	UT Tyger River/south of S-75		50	100	1991	2008	SPAR		same as 9058	
3	23	9058	BD	UT Tyger River/south of S-75						SPAR		same as 1649 (duplicate plant count)	
4	2	7399	BD	1.5 mi south of Gowensville/SC14		150		1991	2008	GREE			
4	4	3101	CD	Fairview Farms		75		1991	2008	SPAR			
4	24	6179	CD	UT Motlow Creek		50	100	1991	2008	SPAR			
4	32	5677	BD	Page Creek at Landrum HS		155		1991	2008	SPAR			
4	33	4879	BD	NW of Junction SC11 and SC14		168		1991	2008	GREE			
4	36	1993	BD	Clear Branch Creek		303		1991	2008	SPAR			
4	38	3367	BD	UT Spivey Creek	+	1000		1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
4	39	8503	CD	1 mi SW of US176 and S-209 in Ingleside		66		1991	2008	SPAR			
4	40	8504	BD	UT Clear Branch Creek		221		1991	2008	SPAR			
4	41	1460	CD	SC 14 and High Farm Road		50	100	1991	2008	SPAR			
4	42	8856	BD	1/4 mi E of SC14 and South Pacolet River		189		1991	2008	GREE/SPAR			
4	49	1450	AB	UT Page Creek/Campbell Ave		750	800	2001	2008	SPAR	?	2001 "new Spartanburg Water Systems preserve"	Spartanburg Water System (who?)
4	50	1449	BD	Page Creek Sewer Line		400	550	2001	2008	SPAR	?	2001 "an easment is being sought"	Spartanburg Water System (who?)
4	54	2719	BD	Headwater UT Wolfe Creek		400		2001	2008	SPAR	?	"On City of Landrum Property"	
4	59	13002	BD	Beaver Dam Creek/MetCalf		250	500	2005	2011	SPAR			
5	30	6009	BD	Greene Creek		100		1994	2008	SPAR			
6	25	878	CD	Lake William Bowen		10	20	1991	2008	SPAR			
7	37	6749	CD	Bear Creek		56		1991	2008	SPAR			
8	35	108	BD	Alverson Grove Church		74		1991	2008	SPAR			
9	34	7788	BD	Arrowood Branch		13		1991	2008	SPAR			
10	31	1730	H?	Blalock Res Site P				1984	2009	SPAR		NCNHP includes EO 7 and 31 as Blalock sites, 5-YR Review includes EO 7 and 29. 2km rule groups EO 7 and 29 together with EO 31 separate (>2km) but close by.	Spartanburg Water System (who?)
11	7	7013	BD	Taylor Blalock Res		3505		2016	2008	SPAR		James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	Spartanburg Water System (who?) or Gaddy
11	29	6010	H?	Blalock Res Site C				1984	2009	SPAR			Spartanburg Water System (who?)
12	20	3552	BD	Camp Mary Elizabeth		150		1991	2008	SPAR	?	Girl Scouts of America	Fred Parrish
12	21	1984	BD	Beaverdam Creek/Claggett Raintree		700		1991	2008	SPAR	?	SC Nature Conservancy	Kristen Austin (TNC SC) emailed 12/12/17, or Fred Parrish
12	55	2486	CD	UT North Tyger River/Woodridge		50		2001	2008	SPAR			
13	9	7930	CD	Chinquapin Creek		?		1991	2008	SPAR		"two small colonies"	Fred Parrish
13	13	6456	BD	UT Cleveland Park Lake		50		1991	2008	SPAR	?	City of Spartanburg - Cleveland Park	Fred Parrish
13	19	3551	BC	USC-Upstate		25	50	1991	2008	SPAR			Doug Rayner (Wofford College) - emailed 12/12/17
13	46	2369	CD	Shoally Creek		25		1998	2008	SPAR			
13	53	8981	BC	USC-Upstate		250	300	2000	2008	SPAR		Is this a part of other USC population?	Doug Rayner (Wofford College) - emailed 12/12/17
13	56	6523	BD	Lawsons Fork Creek on US221		200	250	2001	2008	SPAR			
14	11	6097	AB	DNR Peters Creek Heritage Preserve		3306		2016	2008	SPAR	Y	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	14	2791	AB	DNR Peters Creek Heritage Preserve		5000		1991	2008	SPAR	Y	DNR Peters Creek Heritage Preserve, Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	26	5183	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	27	4476	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	28	8667	BD	Peters Creek Dwarf-flowered Heartleaf Site		5000		1991	2008	SPAR	?	Is this part of the Heritage Preserve? Part of a very large population (5000 plants total)	Pat Cloninger (Preserve Manager) - emailed 12/12/17, ask Fred Parrish too
14	47	6953	U	Cannon Campground Road and Kelly Road				1998	2008	SPAR			
14	48	2769	U	Kelly Road				1998	2008	SPAR			
14	57	4312	BD	Lincoln Memorial Cem/Cannon Campground Rd		450	600	1997	2012	SPAR			
15	16	916	BC	Cowpens NBF - Site 1		2823		2016	2008	CHER		US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	Park manager (who?) or NCNHP

Populations	EO Number	EO ID Number	EO Rank	Site Name	Number of Plants			Last Observed	Rank Date	County	Protection	Notes	Who might know/contact
15	17	5173	BC	Cowpens NBF - Site 3	+	130		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
15	18	6825	BC	Cowpens NBF - Site 2		50		1991	2008	CHER	Y	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17)	Park manager (who?) or NCNHP
16	1	235	BD	Cherokee Creek/SC 11		200		1991	2008	CHER			
16	44	3124	H?	SW side of SC 11 - 5.45 mi NW of I-85				1984	2009	CHER			
16	45	5554	U	Lenzer Circle				1989	2008	CHER			
16	60	13003	BD	Cherokee Creek/Bonner and Robin School Roads		1500		2004	2011	CHER			
17	43	7286	CD	McKee Drive		20		1991	2008	CHER			
18	12	1322	H?	Horse Creek				1986	2012	CHER			
				Boulder Creek Subdivision - Jordan Road		15	20	2006		GREE	Y	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17)	April Punsalan
				Gateway Elementary School						GREE		"number of clumps around trees near streams" (F. Hollemon 12/12/17)	

Populations	EO Number	EO Rank	Site Name	Total Estimated Plants	Resilience Category	Last Observed	County	Notes	RNR Notes
1	7; 29	BD	Taylor Blalock Res	>1000	Very High	2016	SPAR	James Padgett partially remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive, use two files in combination (data from L. Robinson 09.28.17); Sites (2 Eos) last visited in 2016, 351 plants in plots, extrapolated for site - 3,505 plants. Site includes all EOs in orange.	
2	11; 14; 26; 27; 28; 47; 48; 57	AB	DNR Peters Creek Heritage Preserve	>1000	Very High	2016	SPAR	DNR Peters Creek Heritage Preserve; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Site last visited in 2016, only EO11 was monitored but high accuracy mapping was obtained for other EOs, 335 plants in plots, extrapolated for site - 3,306 plants. Site includes all EOs in purple.	
3	16; 17; 18	BC	Cowpens NBF - Site 1	>1000	Very High	2016	CHER	US National Park Service; James Padgett remapped site in 2012, included in "HENA Polygons (3) in SC" on Drive (data from L. Robinson 09.28.17); Sites (all 3 Eos) last visited in 2016, 322 plants in plots, extrapolated for site - 2,823 plants. Site includes all EOs in green.	
4	?	?	Boulder Creek Subdivision - Jordan Road	<100	Low	2016	GREE	"25-foot protective buffer will be fenced and maintained in restrictive covenants" (per FWS Log No 2006-I-0420); 8-acres, Greer, SC, recorded RCs, est. 15-20 plants, management plan not in place (F. Holleman 12/12/17). Last seen in 2016 per F. Hollemon (02/06/18).	Two locations [redacted]. Coordinates located from paper maps.
5	?	?	Gateway Elementary School	<100	Low	2017	GREE	"number of clumps around trees near streams" (F. Hollemon 12/12/17). Last seen in 2017, not a full survey just noticed plants likely additional plants in wooded area. Plants located directly behind school per F. Hollemon (02/06/18)	"Directly behind school" is approximately [redacted]

From: Marshall, Michael E
To: Endries, Mark
Cc: Reid, Rebekah N
Subject: Re: SC Population questions
Date: Thursday, March 29, 2018 1:45:10 PM
Importance: High

Perfect! Thanks Mark.

Mike

On Thu, Mar 29, 2018 at 1:40 PM, Endries, Mark <mark_endries@fws.gov> wrote:

> Hi Mike,
>
> Populations 1,2, and 3 are South Carolina populations.
>
> Taylor Blaylock is #1
> DNR Peters Creek Heritage Preserve is #2
> Cowpens NBF - Site 1 is #3
> Boulder Creek Subdivision is #4
> Gateway Elementary School is #5.
>
> This info is in the spreadsheet I've attached. Populations 4 and 5 are points only and therefore are not included in the area summaries I put together.
>
> Thanks!
>
> Mark
>
> **Mark Endries**
> USFWS
> 160 Zillicoa St
> Asheville, NC 28801
> Office: 828.258.3939 ext. 231
> Mobile: 828.215.1740
>
> On Thu, Mar 29, 2018 at 1:26 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Hi Rebekah,
> >
> > I have some questions about tracking population numbers....particularly the SC populations:
> >
> > You produced a list of populations that had various levels of protection....what populations are 1, 2, and 3.
> >
> > Also, do we have population numbers for the following? So I can track them on the Maxent and Sleuth outputs.
> >
> > | |
> > |---|
> > | Rock Barn Solar Farm |
> > | Taylor Blaylock Res |
> > | Boulder Creek Subdivision |
> > | |

> Gateway Elementary School
>
> Thanks!
>
> Mike
>
> --
> Mike Marshall
> SSA Program Specialist
> U.S. Fish and Wildlife Service Region 4
> Cell: 512-461-6217
> Alternate email: mmarshall@ag.tamu.edu
>
> **Work Schedule 1st Week**
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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark
Subject: Re: SC Population questions
Date: Friday, March 30, 2018 7:21:12 AM

Mark - Thanks for covering while I was out yesterday.

Rock Barn Solar Farm didn't have a population number and was also just a point so I don't think that made it into the model. Mark - Am I remembering that correctly?

Rebekah Reid

US Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa St.
Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Thu, Mar 29, 2018 at 1:45 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Perfect! Thanks Mark.
>
> Mike
>
> On Thu, Mar 29, 2018 at 1:40 PM, Endries, Mark <mark_endries@fws.gov> wrote:
>
> > Hi Mike,
> >
> > Populations 1,2, and 3 are South Carolina populations.
> >
> > Taylor Blaylock is #1
> > DNR Peters Creek Heritage Preserve is #2
> > Cowpens NBF - Site 1 is #3
> > Boulder Creek Subdivision is #4
> > Gateway Elementary School is #5.
> >
> > This info is in the spreadsheet I've attached. Populations 4 and 5 are points only and therefore are not included in the area summaries I put together.
> >
> > Thanks!
> >
> > Mark
> >
> > **Mark Endries**
> > USFWS
> > 160 Zillicoa St
> > Asheville, NC 28801
> > Office: 828.258.3939 ext. 231
> > Mobile: 828.215.1740

On Thu, Mar 29, 2018 at 1:26 PM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hi Rebekah,
>
> I have some questions about tracking population numbers....particularly the SC populations:
>
> You produced a list of populations that had various levels of protection....what populations are 1, 2, and 3.
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> Also, do we have population numbers for the following? So I can track them on the Maxent and Sleuth outputs.
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> |---|
> | Rock Barn Solar Farm |
> | Taylor Blaylock Res |
> | Boulder Creek Subdivision |
> | Gateway Elementary School |
>
> Thanks!
>
> Mike
>
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From: Reid, Rebekah N
To: Marshall, Michael E
Cc: Endries, Mark
Subject: Re: A few requests
Date: Friday, May 11, 2018 11:40:41 AM
Attachments: Cover Page and Table of Contents RNR comments.docx
Draft HENA SSA_05112018 RNR comments.docx
Possible Peer Reviewers v2.docx
Importance: High

Hey Mike,

The beefed up section looks good. My comments are attached...nothing major just a few typos and small suggested word changes. One thing I noticed - the SSA mentions 113 populations as of 2016, but then says the SSA recognizes 119 populations. It's clear to me what is going on there but is that going to be confusing to the recommendation team?

Also, just so you don't have to dig. Attached is the peer reviewer list to send up to the RO (Byron has is but just in case). Will they copy us on the peer review request or let us know when it goes out?

Thanks!

Rebekah Reid

US Fish and Wildlife Service
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Asheville, NC 28801
phone: 828-258-3939 x238
cell: 828-782-0090

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On Fri, May 11, 2018 at 10:14 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:

> Got this one, too.
>
> Rebekah Reid
>
> US Fish and Wildlife Service
> Asheville Ecological Services Field Office
> 160 Zillicoa St.
> Asheville, NC 28801
> phone: 828-258-3939 x238
> cell: 828-782-0090
>
> ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
>
> On Fri, May 11, 2018 at 10:10 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

Here's the rest

On Fri, May 11, 2018 at 10:09 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Awesome! Thanks!
>
> So.....to maximize your time for review today, I am going to go ahead and send along the report and executive summary as it is....I need to re number and fix up the appendices, so they are not attached. I also need to number the pages and fix up the table of contents, so don't worry about that.
>
> I would suggest focusing on the executive summary (which was quickly put together this morning, and you have never seen), and on the future conditions section, which I did some substantial edits to. Also, I took out the Wagner modelling stuff and moved our modelling effort into that section front and center.
>
> Big file size....lets see if it will email....here's the SSA first....next will be cover page/exec summary.....
>
> Hope its looking good!
>
> Thanks,
>
> Mike
>
> On Fri, May 11, 2018 at 9:38 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > New and improved Appendix 4 with 78 pops. Should be plug and play...
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
> > phone: 828-258-3939 x238
> > cell: 828-782-0090
> >
> > ***NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.***
> >
> > On Fri, May 11, 2018 at 9:25 AM, Endries, Mark <mark_endries@fws.gov> wrote:
> >
> > > I'm here too and can give it a quick look over. That said, I'm fine with it going straight out for review.
> > >
> > > Thanks!
> > >
> > > Mark
> > >
> > > **Mark Endries**
> > > USFWS
> > > 160 Zillicoa St

Asheville, NC 28801
Office: 828.258.3939 ext. 231
Mobile: 828.215.1740

On Fri, May 11, 2018 at 8:58 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:

> Hi guys,
>
> I agree about not showing exact locations....I don't think they were actually requesting a map, but rather, were just interested if we were going to put it in the SSA (the last map in the SSA with potential locations of HENA based on the model was what spurred them to think this). I'm thinking my response to the comment will be that we do not want to show the locations for all the reasons we discussed.
>
> Once I get the updated table from Rebekah....are you thinking I should just pass it along to send out for peer review, or do you guys want a last look at it after implementing the suggested edits from the experts? A note....I will be out Mon-Thursday of next week, so if we don't get the peer review rolling today, I won't be able to do much for about a week.
>
> Thanks!
>
> Mike
>
> On Fri, May 11, 2018 at 7:12 AM, Reid, Rebekah <rebekah_reid@fws.gov> wrote:
>
> > Hi,
> >
> > Do they just want to see a map or do they want it as part of the SSA?
> >
> > I don't think we should include exact locations in the SSA but if they would like to see a map, that's OK. They should already know what it looks like for NC...we used NHP's definition of populations in NC. We used FWS's definition of populations from the 5-Yr Review for SC. We could plot that on a map for them quickly if they want to see it.
> >
> > I can update the list in the Appendix today.
> >
> > Thanks.
> >
> > Rebekah Reid
> >
> > US Fish and Wildlife Service
> > Asheville Ecological Services Field Office
> > 160 Zillicoa St.
> > Asheville, NC 28801
> > phone: 828-258-3939 x238
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> >
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On Thu, May 10, 2018 at 9:57 AM, Endries, Mark <mark_endries@fws.gov> wrote:

> Hi Mike,
>
> Rebekah would need to sign off on the map. I do know we are very sensitive to displaying points on a map for species which are sensitive to poaching. I'm not sure if that is a big concern or not for HENA.
>
> Mark
>
> **Mark Endries**
> USFWS
> 160 Zillicoa St
> Asheville, NC 28801
> Office: 828.258.3939 ext. 231
> Mobile: 828.215.1740
>
> On Thu, May 10, 2018 at 9:50 AM, Marshall, Michael <michael_marshall@fws.gov> wrote:
>
> > Hey guys,
> >
> > A few requests from comments on the draft from NCNHP:
> >
> > They are requesting a map with our current populations delineated....I know we were trying to avoid putting dots on a map....thoughts?
> >
> > Rebekah: after we included additional populations (went back to 2005), I forgot that the appendix which shows the protection status of those additional populations needs to be updated....as of now there are 64, but should reflect our 78 current pops.
> >
> > I think that's it for now....getting super close!
> >
> > Mike
> >
> > --
> > Mike Marshall
> > SSA Program Specialist
> > U.S. Fish and Wildlife Service Region 4
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DRAFT Species Status Assessment Report

for

Dwarf-flowered Heartleaf (*Hexastylis naniflora*)

Version 1.0



xx-xx-201x (date)

U.S. Fish and Wildlife Service

Region 4

Atlanta, GA

ACKNOWLEDGEMENTS

This document was prepared by Michael Marshall (U.S. Fish and Wildlife Service [Service]-Texas A &M Natural Resource Institute [NRI]), Rebekah Reid (Service), Mark Endries (Service), and Stephanie DeMay (Texas A&M NRI). External species expertise, guidance, and document reviews were provided by technical team members Suzanne Mason (North Carolina Natural Heritage Program [NCNHP]), Jame Amoroso (NCNHP), Matt Estep (Appalachian State University), and Laura Robinson (NCNHP). Peer review was provided by _____.

Deleted: N

EXECUTIVE SUMMARY

The Species Status Assessment (SSA) reports the results of the comprehensive status review for the dwarf-flowered heartleaf (*Hexastylis naniflora*). For the purpose of this assessment, we generally define viability as the ability of the dwarf-flowered heartleaf to sustain resilient populations in the natural ecosystems within its range over time. Using the SSA framework, we consider what the species needs to maintain viability by characterizing the status of the species in terms of its resiliency, redundancy, and representation (USFWS 2016, entire; Wolf et al. 2015, entire). This SSA provides a thorough assessment of biology and natural history and assesses demographic risks, stressors, and limiting factors in the context of determining the viability for the species. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time.

The dwarf-flowered heartleaf is a low growing herbaceous plant in the birthwort family (Aristolochiaceae) with a range currently restricted to 13 counties within the Upper Piedmont of South Carolina and North Carolina. The species appears to have a restricted range due to its habitat requirements, including soil type, moisture availability, and various other landform characteristics (Wagner 2013).

For the dwarf-flowered heartleaf to maintain viability, its populations or some portion thereof must be resilient. Stochastic factors that have the potential to affect the species include habitat loss due to the conversion of land to residential, commercial, and industrial use. Other factors that influence the resiliency of dwarf-flowered heartleaf populations include habitat loss from land conversion to agricultural use, timber harvest, hydrological alterations from the damming of

ponds, impacts from grazing cattle, ORV damage, trampling from foot traffic, invasive species, highway or road improvements, and erosion or siltation (NCNHP 2016, Robinson and Padgett 2016). Climate change may exacerbate these risk factors through changes in temperature and precipitation.

For the purposes of this SSA, we use population size as the main driver of population resilience. The unit of measurement for population size in this species is a "clump" (rosette). We used Element Occurrence data from both North Carolina Natural Heritage Program and South Carolina Heritage Trust Program as a basis for delineating populations. Delineations were based off of NatureServe criteria such as EO separation distance and intervening landscape matrix. EO data included a wide range of years since the species was last observed at a given location (1964-2017), however, we only used EOs that were observed since 2005.

Deleted: Natural

Deleted: s

To determine overall resilience for populations, we used last known abundance estimates to bin population size classes into corresponding resilience categories. EO rank specifications suggest good-excellent viability for populations consisting of at least 500 individuals, given there is sufficient high quality habitat; fair viability for populations consisting of 100-500 individuals, depending on habitat conditions; poor viability for populations consisting of less than 100 individuals. Recent reports (Robinson 2016; Robinson and Padgett 2016) focus monitoring studies on populations with greater than 1,000 individuals, populations that are assumed to be very viable. We synthesized all of the above population size information and created four resilience categories as follows:

- Very high—populations with >1,000 individuals; very high probability of persistence for 20-30 years at or above the current population size.

- High—populations with 500-1,000 individuals; moderate-high probability of persistence for 20-30 years at or above the current population size.

- Moderate—populations with 100-500 individuals; low probability of persistence for 20-30 years at or above the current population size.

- Low—populations with <100 individuals; low probability of persistence for 20-30 years at or above the current population size, and moderate-high probability of extirpation.

There are currently 78 populations of dwarf-flowered heartleaf that have been observed since 2005. The resilience of these populations is as follows: 28 (very high); 5 (high); 26 (moderate); 19 (low).

Our analysis of future conditions focused on the potential negative impacts of urbanization, and potential positive effects of location or rediscovery of additional populations. Because the actual impacts of urbanization and probability of locating additional populations are unknown, we use three scenarios, projected out to the year 2040, to capture the uncertainty related to the potential impacts to each population's resiliency: Status Quo, Targeted Conservation, and High Development. A projection out to 2040 was based on the life span of the species, expert input, development as the key risk factor brought forward, uncertainty about future conditions, and lack of knowledge about where additional populations may persist on the landscape.

We used the Slope, Land cover, Exclusion, Urbanization, Transportation, and Hillshade (SLEUTH) models to determine areas predicted to be urbanized by 2040. We used a habitat model and corresponding SMART methodology to assess the likelihood that the species would be found to persist on various sites.

Urban development is predicted to have negative impacts on several of the current populations under all of our scenarios. However, this loss of resilience and extirpation of a few populations is offset by the fact that several additional populations were found to persist in the Status Quo and Targeted Conservation scenarios. In the High Development Scenario, there is a predicted loss of 6 populations, with loss of resilience in several additional populations. Regardless of the scenario, the majority of the populations expected to persist on the landscape in 2040 are of at least moderate resilience.

Given the species' current condition and the impacts that the species is expected to experience under the future scenarios, some reductions in resilience are anticipated, but redundancy and representation are unaffected under all scenarios. The results of the SSA indicate the species has a low susceptibility to threats and a high degree of stability.

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Chapter 1: INTRODUCTION

The dwarf-flowered heartleaf (*Hexastylis naniflora*) is a species of plant endemic to the upper Piedmont region of western North Carolina and upstate South Carolina. The dwarf-flowered heartleaf has been listed as threatened under the Endangered Species Act of 1973, as amended (Act), since 1989 (FR 54 14964-14967). The Species Status Assessment (SSA) framework (USFWS 2016, entire) summarizes the information compiled and reviewed by the US Fish and Wildlife Service (Service), incorporating the best available scientific and commercial data, to conduct an in-depth review of the species' biology and threats, evaluate its biological status, and assess the resources and conditions needed to maintain long-term viability. The intent is for the SSA to be easily updated as new information becomes available and to support all functions of the Endangered Species Program from listing to consultations to recovery.

A Recovery Plan for the species was never completed. However, over the last 29 years, the Service has worked closely with partners to make significant progress toward recovery of the species. The Service is initiating this SSA to aid in determining the appropriateness of reclassifying the species. In the event that the SSA does not support reclassification, the SSA will be used to inform the development of a Recovery Plan. Importantly, the SSA does not result in a decision by the Service on whether this species should be proposed for reclassification under the Act. Instead, this SSA provides a review of the available information strictly related to the biological status of the dwarf-flowered heartleaf. The reclassification decision will be made by the Service after reviewing this document and all relevant laws, regulations, and policies. The results of a proposed decision will be announced in the *Federal Register,* with appropriate opportunities for public input.

For the purpose of this assessment, we generally define viability as the ability of the species to sustain populations in its natural systems over time. Using the SSA framework (Figure 1.1), we consider what the species needs to maintain viability by characterizing the status of the species in terms of its resiliency, redundancy, and representation (Wolf *et al.* 2015, entire).

- **Resiliency** describes the ability of populations to withstand stochastic events (arising from random factors). We can measure resiliency based on metrics of population health;

for example, birth versus death rates and population size. Highly resilient populations are better able to withstand disturbances such as random fluctuations in birth rates (demographic stochasticity), variations in rainfall (environmental stochasticity), or the effects of anthropogenic activities.

- **Redundancy** describes the ability of a species to withstand catastrophic events. Measured by the number of populations, their resiliency, and their distribution (and connectivity), redundancy gauges the probability that the species has a margin of safety to withstand or can bounce back from catastrophic events (such as a rare destructive natural event or episode involving many populations).
- **Representation** describes the ability of a species to adapt to changing environmental conditions. Representation can be measured by the breadth of genetic or environmental diversity within and among populations and gauges the probability that a species is capable of adapting to environmental changes. The more representation, or diversity, a species has, the more it is capable of adapting to changes (natural or human caused) in its environment. In the absence of species-specific genetic and ecological diversity information, we evaluate representation based on the extent and variability of habitat characteristics across the geographical range.

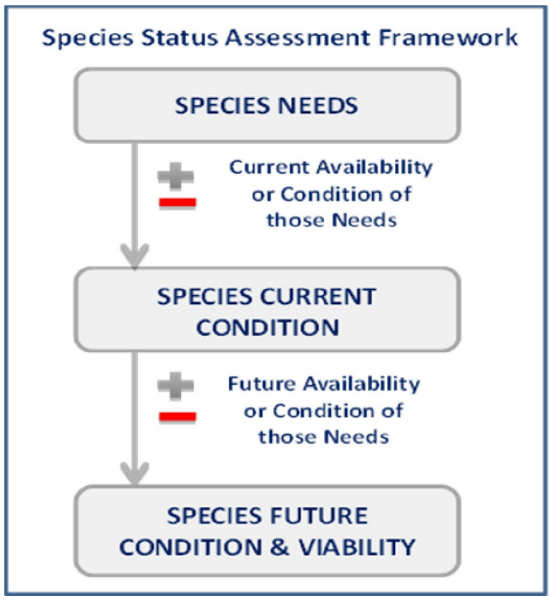


Figure 1.1. Species Status Assessment Framework

To evaluate the biological status of the dwarf-flowered heartleaf, both currently and into the future, we assessed a range of conditions to allow us to consider the species' resiliency, redundancy, and representation (together, the 3Rs). This SSA provides a thorough assessment of biology and natural history, and assesses demographic risks, stressors, and limiting factors in the context of determining the viability and risks of extinction for the species.

The format for this SSA includes: (1) Biology and Species Needs, (2) Current Conditions, (3) Influences on Viability, and (4) Future Conditions. This document is a compilation of the best available scientific and commercial information, and a description of past, present, and likely future risk factors to the dwarf-flowered heartleaf.

Chapter 2: SPECIES BIOLOGY

In this chapter, we provide basic biological information about the dwarf-flowered heartleaf, including its taxonomic history, species description, distribution, life history traits, and habitat characteristics. We then use this information to outline the resource needs within various life stages of dwarf-flowered heartleaf. Here we report those aspects of the life history of the dwarf-flowered heartleaf that are important to our analysis.

Taxonomy and species description

Dwarf-flowered heartleaf is a rare, low growing herbaceous plant in the birthwort family (Aristolochiaceae). The species was described by Blomquist (1957) in his revision of the North American members of the genus *Hexastylis*. The dwarf-flowered heartleaf has been recognized as part of the Virginica Group, and this group was further subdivided into three Subgroups: Virginica, Shuttleworthii, and Heterophylla (Blomquist 1957; Whittemore and Gaddy 1997). Three species have been recognized in the Heterophylla complex, *Hexastylis naniflora, H. heterophylla* and *H. minor*, and field biologist have generally recognized that considerable morphological overlap occurs (Murrell et al. 2007). One of the main concerns regarding this complex was the inability to distinguish between species without access to fresh flowers. Even with fresh flowers, Blomquist (1957) and Gaddy (1987) still recognized considerable overlap in flower morphology making species delineation difficult.

Murell et al. 2007, conducted a comparative genetic analysis using Inter Simple Sequence Repeats, and were unable to find banding patterns that could be used to separate *H. naniflora* from the other members within the complex. However, based on biogeographical, ecological, molecular, morphological, as well as micromorphological work, their results show that *H. naniflora* is a well-defined species.

Although there has been considerable disagreement on the generic distinctiveness of *Hexastylis* and *Asarum* (Barringer 1993 and Kelly 1997, 1998, 2001), a recent phylogeny estimate using chloroplast genes supports that *Hexastylis* is a monophyletic clade and therefore should be

recognized as a genus (Niedenberger 2010). Additionally, most North American publications recognize *Hexastylis* at the generic level (Flora of North America 1997, Weakley 2015).

The Service is not aware of any proposed changes in taxonomy that would affect the continued legal status of *H. naniflora* under the Act. However, within the range of *H. naniflora* there are populations which fall outside of the range of published values for key floral characteristics, overlapping with values described for *H. heterophylla* or *H. minor* (Figure 2.1; Weakley, 2010; Murrell et al. 2007; Gaddy 1987). These geographic areas of overlap in key characters have been the focus of recent genetic analyses (Murrell et al. 2007; Renninger, 2010; Murrell, 2015).

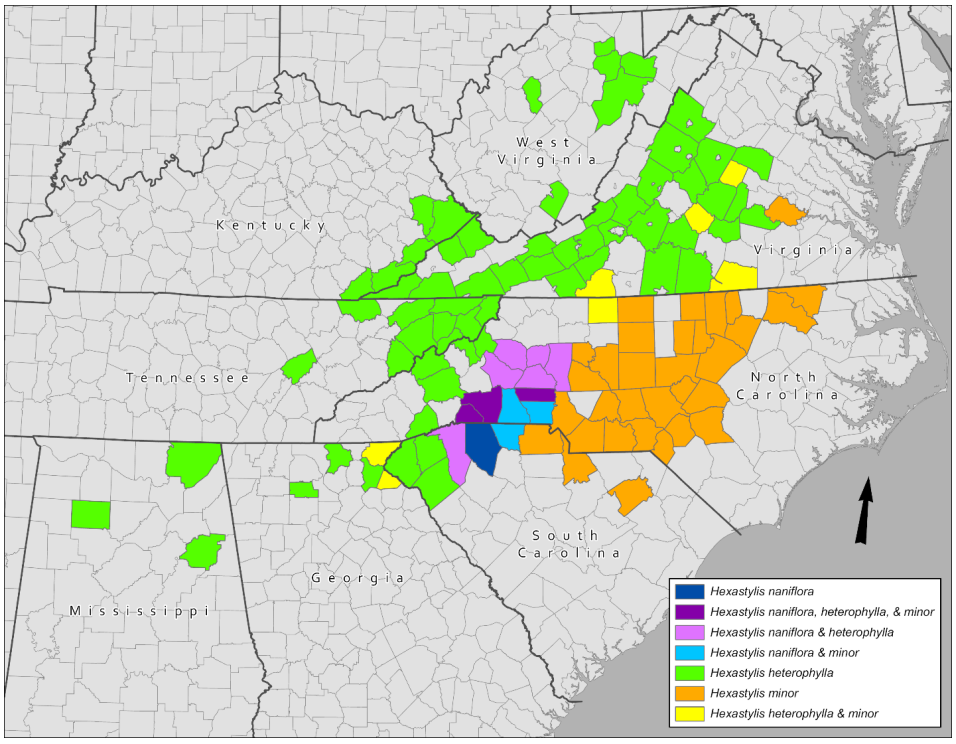


Figure 2.1. Distribution map showing county records for the three species in the *H. heterophylla* complex. Data was gathered from herbarium specimens, Element Occurrence Records (EORs) sheets and field studies. *Based on Murrell et al. 2007.*

The most outstanding characteristic of this species is the small flowers, which are one of the smallest of any species in North America (Blomquist 1957). The plant's heart shaped leaves are dark green in color, evergreen, and leathery, and are supported by long thin petioles from a subsurface rhizome. The shape of the leaf blades, their pattern of variegation, and the ridged reticulation inside the calyx-tube, place this species inside the Virginica group. It differs from all the other members of this group, aside from the small flowers, in having no flare in the calyx-tube. Maximum height rarely exceeds 15 centimeters (cm). The jug shaped flowers are usually beige to dark brown in color and appear from mid-March to early June. The flowers are small and inconspicuous and are found near the base of the petioles. The fruit matures from mid-May to early July (Blomquist 1957, Gaddy 1980, 1981). Characteristics that distinguish it from other *Hexastylis* species are found in floral structures and pollen characters (Gaddy 1987, Padgett 2004, Niedenberger 2010). *H. naniflora* has a smaller calyx tube orifice, which is typically 5mm or less (sometimes up to 7mm) and the ovary is half-inferior, rather than superior (Blomquist 1957, Gaddy 1987, Padgett 2004, HDR 2005). Pollen surface features have also been shown to be an effective character to identify *H. naniflora*, as it has a microporate surface and, unlike any other *Hexastylis* species, lacks gemmae entirely (Padgett 2004, Niedenberger 2010).

Distribution

Although dwarf-flowered heartleaf is restricted in range, it is not as rare as once thought (USFWS 2010, NCNHP 2016). When dwarf-flowered heartleaf was federally listed in 1989, the listing rule described 24 extant "populations" (and one extirpated population) distributed across eight counties in the upper Piedmont of North and South Carolina. Since 1989, the range has expanded to include four additional counties in North Carolina. In North Carolina, it is found in Alexander, Burke, Caldwell, Catawba, Cleveland, Gaston, Iredell, Lincoln, Polk, and Rutherford Counties. In South Carolina, it is in Cherokee, Greenville, and Spartanburg Counties. As of 2016, the distribution of this species consisted of 113 populations distributed across 13 counties in these two states (Figure 2.2).

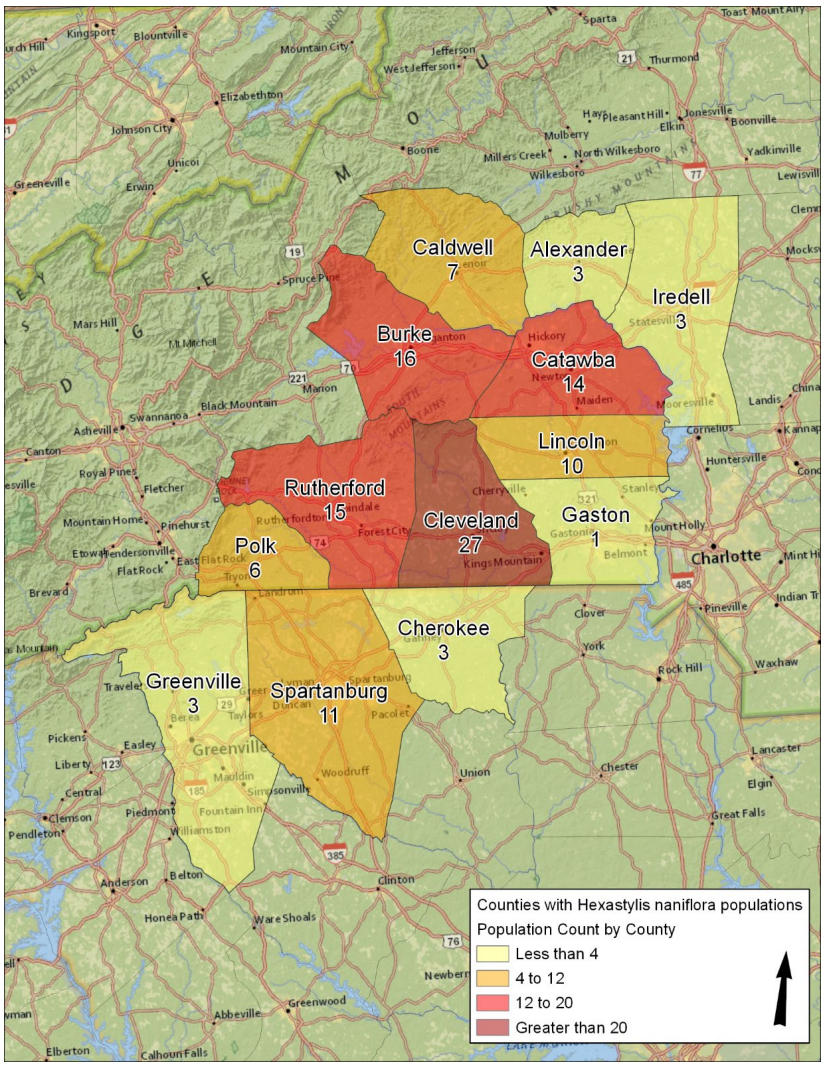


Figure 2.2. Current county distribution for dwarf-flowered heartleaf, with associated number of known populations within each county.

Many of those working with *Hexastylis naniflora* have used the terms “sub site”, “site”, “location”, “occurrence” (often, but not always, in reference to Natural Heritage Program Element Occurrence (EO) Records), “subpopulation” and “population” interchangeably. Others

have aggregated smaller sites into populations according to subjective criteria which have never been explicitly defined. This generates discrepancies among sources with respect to the abundance and distribution of the species, with the net result being that available data are usually not comparable from one source to the next. We describe how the numerous small, site-specific locations containing *H. naniflora* have been aggregated into proxies for 119 biological populations for purposes of this review, using mapping standards devised by NatureServe and its network of Natural Heritage Programs, in the Species Needs section of this report.

Life History

Demographics

The Service is aware of a single effort to collect demographic-level data (survivorship and recruitment of tagged individuals) for dwarf-flowered heartleaf. This effort was conducted during the 1990-1991 field seasons, within a portion of the Peters Creek population in Spartanburg County, SC (Newberry, 1993). This study demonstrated a 96.1% survival rate over these two consecutive seasons, with 50% of the mortality occurring in plants located at the highest position on the forested slope (away from the adjacent floodplain). Mortality was highest in small plants bearing fewer than four leaves. Plant size was variable, with the largest plant bearing 45 leaves and 33 flowers, and situated in the floodplain. In general, plants located in the floodplain were larger than plants located on adjacent slopes. The percentage of flowering plants averaged 70%, with the highest frequency of flowering occurring among plants situated in the floodplain (USFWS 2010).

Pollination and Dispersal

The pollination of *Hexastylis* has not been well studied but the genus was thought to be pollinated by insects including flies, wasps, and thrips (Otte 1977). Additionally, Lengyel et al. (2010) described how, within the family Aristolochiaeae, more than 50% of the plant lineage is myrmecochorous (seed dispersal by ants). This supports Gaddy's work (1986), which found three species within the Hexastylis Heterophylla subgroup (*H. heterophylla, H. naniflora, and H. minor*), which employ myrmecochory as a method for seed dispersal.

Ants appear to be a primary dispersal agent for the dwarf-flowered heartleaf (Gaddy 1986; Jones et al. 2014). All diaspores of *Hexastylis naniflora* presented to ants (*Aphaenogaster rudis*) were quickly removed (Gaddy, 1986). This is not to say that they are not occasionally, or even frequently, dispersed and/or pollinated by other means. Jones et al. (2014) suggests that the pollination mechanism is facultative, benefiting from more than one method of pollination/fertilization. Ants were the pollinators in a controlled experiment, and their data supports that when outside molesting forces/pollinators (biotic and abiotic) were limited by their caging procedure, the efficiency of pollination decreased by almost 50%, however, caged flowers did produce seeds, indicating pollination occurred via some alternative method.

Habitat

Dwarf-flowered heartleaf appears to have a restricted range due to its habitat requirements. The habitat where dwarf-flowered heartleaf exists is limited in size and scope due to a multitude of factors including soil type, moisture availability, and slope aspect (Wagner 2013). This unique combination of factors limits not only the range of dwarf-flowered heartleaf, but also the size of a given population. With the limited range and size in populations, questions arise regarding gene flow among populations. How much is occurring and how often does it occur? It is due, in part, to narrow habitat requirements that conservation measures have been implemented for the protection of the species. Any efforts made to protect this species must consider giving protection to the available habitat.

Dwarf-flowered heartleaf occurs on piedmont uplands on acidic sandy-loam soils that are very deep and moderately permeable (Gaddy 1981, 1987). Typical habitats for this species include mesic to dry bluffs, slopes, or ravines in deciduous forests that are frequently associated with *Kalmia latifolia* (Padgett 2004, Weakley 2015, USFWS 2015), or in moist soils adjacent to creeks, streamheads, or along lakes and rivers. Plants have been observed to grow larger and have more frequent flowering in floodplains along rivers, lakes, and streams (Newberry 1993). Wagner (2013) conducted a habitat suitability study to quantify the habitat requirements for dwarf-flowered heartleaf, which may be used for helping identify the species when not in flower

(relative to other *Hexastylis* species habitat preferences), find new populations, or identify suitable sites for transplants.

Soils

The species appears to be restricted to Pacolet sandy loam, Madison gravelly sandy loam, and Musella fine sandy loam soils (Gaddy 1981,1987). The species grows in acidic soils along bluffs and adjacent slopes, in boggy areas next to streams and creekheads, and along the slopes of nearby hillsides and ravines (Gaddy 1980, 1981). The plant is primarily found inhabiting north- to northwest-facing slopes, bluffs, and ravines in close proximity to creeks or streams. Within these areas exists the soil type required for *H. naniflora* to grow. It grows primarily on well-drained, sandy, acidic soils, and will not grow in heavy clay (Gaddy 1981).

The results of soil samples analyzed at the Clemson Soil Lab suggest that major differences in soil chemistry exist between the species in the *H. heterophylla* complex (Murrell et al. 2007). Statistical analysis of the soil samples showed that many of the basic elements were significantly different among the three species. Those significant differences occurred in Phosphorous (P), Potassium (K), Magnesium (Mg), Zinc (Zn), Manganese (Mn), (Na), Sodium, and Cation Exchange Capacity (CEC). Slightly significant differences were seen in Buffer pH (Bu pH), and Acidity.

Soil chemistry showed marked differences between the species in the complex (Murrell et al. 2007). The results indicated that soil chemistry is very different between *H. naniflora* and *H. minor* localities. The results also show that *H. heterophylla* and *H. naniflora* are found in soils where the chemistry is more similar, but still showed significant differences. It would appear that differentiation in soil types could be used as a proxy for species delineation. The soil analysis also indicates that soils must be considered when trying to select sites for relocation of imperiled populations of *H. naniflora*.

Thirteen population sites in North Carolina and South Carolina were examined using the Carolina Vegetation Survey (CVS) method to compare species richness between the three

species of the *Hexastylis heterophylla* complex (Murrell et al. 2007). The analysis did not show statistically significant differences among the three species in the *H. heterophylla* complex. However, *H. naniflora* appears to have an association with three oak species that is lacking in the other two species in the complex. There are a number of oak species (*Q. coccinea*, *Q. prinus* (*Q. montana*), and *Q. velutina*), that tend to co-occur with only *H. naniflora*, but are not present with the other two species in the complex. This may be the result of some microbial need or specific soil nutrient required for those species to occur in the same habitat.

Fire

There are little data on the response to fire by *Hexastylis naniflora*, however, prescribed burns have been conducted within the population at Cowpens National Battlefield in Cherokee County, SC. Preliminary data at this site and recent annual monitoring data of this population support the theory that moderate controlled burns do not negatively affect this population (Walker et al. 2009). Additionally, a dormant season wildfire in Caldwell County did not show evidence of negative impacts to a population in Caldwell County (USFWS 2010). Fire suppression could be a hazard to *H. naniflora* by allowing fire intolerant, nonnative and invasive plants to thrive, as well as the accumulation of thick duff or leaf litter that may shade low growing species (Wagner 2013).

Genetics

Analyses on ecology, morphology, soil chemistry, pollen, and molecular genetics have been evaluated for *Hexastylis naniflora* to determine the boundaries within the *Hexastylis heterophylla* complex, which consists of *H. heterophylla*, *H. minor*, and *H. naniflora* (Murrell 2015, Wagner 2013, Niedenburger 2010, USFWS 2010, Murrell et al. 2007, Padgett 2004). These analyses support the continued recognition of these taxa as well-defined, discrete species. Scanning electron microscopy (SEM) consistently distinguished *H. naniflora* from other members of the *H. heterophylla* complex based on pollen microscopy. Principal Components Analysis of floral characters and soil chemistry also consistently distinguished *H. naniflora* from *H. minor* and *H. heterophylla*. However, efforts to obtain consistently distinct banding patterns

using Inter Simple Sequence Repeats (ISSRs) were unsuccessful at distinguishing *H. naniflora* from other members of this group (Murrell et al., 2007). These results were based upon an extremely small sample size (n=10 *H. naniflora* individuals), and therefore warrant further investigation.

Field observations demonstrate that there are some populations of dwarf-flowered heartleaf with morphological characteristics that do not fit within the range of published values for key traits, overlapping with values for *H. heterophylla* or *H. minor* (Gaddy 1987, Murrell et al. 2007, USFWS 2010, Weakley 2015). These populations with overlap in key characteristics were the focus of a genetic analysis conducted at Appalachian State University (ASU) through funding provided by NCDOT (Murrell 2015). In some populations, floral characteristics are highly variable, which suggests the potential for hybridization or individuals with highly variable flower size and shape (Murrell 2015). Additionally, no vegetative characters were previously known to consistently distinguish *Hexastylis naniflora* from other close relatives. Given the difficulties with field identification of the species, particularly when not in flower, this study sought to develop a microsatellite library of molecular markers to resolve variation in populations of dwarf-flowered heartleaf and apply the markers to populations with highly variable characters, as identified by NCDOT biologists. The morphological and micromorphological information from those variable populations were compared to molecular results with morphological, micromophological, and distributional data to determine genetic structure, biological boundaries, and placement of putative hybrids or intermediate populations of *H. naniflora* (Murrell 2015).

The preliminary findings of this study suggest that populations in the southern range of dwarf-flowered heartleaf exhibit a more uniform genetic pattern, with some possible hybridization with *H. minor*. Populations in the northern part of the range appear to have hybridized with both *H. heterophylla* and *H. minor*, although there are still individuals with "pure" *H. naniflora* genotypes in the northern range (Murrell 2015). It is critical to note that although these data provide anecdotal evidence of hybridization with the *Hexastylis heterophylla* group, intraspecific variation may be caused by forces other than hybridization, such as convergent morphological evolution (Dobzhansky 1937), or the species is in the process of speciation and this study shows a case of incomplete speciation (Murrell 2015), and/or other environmental factors are at play

(Wagner 2013). On May 11, 2016, a meeting was held with USFWS, NCNHP, NCDOT, and ASU to discuss the status of *H. naniflora* and the current work being conducted among the agencies (Amoroso 2016). Based on discussions during this meeting, the results of this study reported by ASU to NCDOT in 2015 are preliminary. Dr. Matt Estep (ASU) provided additional preliminary results to NCNHP in May 2016, showing which populations were sampled, sample size, and percent of samples that show evidence of hybridization, and hybridizing with which species. ASU continues to work towards a more definitive explanation of the variation in the *H. heterophylla* complex (Murrell 2015, Amoroso 2016).

CHAPTER 3: SPECIES NEEDS

For the purpose of this report, we define viability as the ability of the species to sustain populations in the wild over time. Species with greater numbers (redundancy) of healthy populations (resiliency), encompassing a broad array of ecological and genetic diversity in a spatial arrangement that maintains adequate gene flow (representation), are more likely to be viable. Using the Species Status Assessment framework, we describe the species' viability by characterizing the status of the species in terms of its resiliency, redundancy, and representation.

Delineating Populations

As stated in the USFWS five-year review, many of those working with dwarf-flowered heartleaf have used the terms "sub site," "site," "location," "occurrence" (often, but not always, in reference to Natural Heritage Program Element Occurrence Records), and "population" interchangeably, while others have aggregated sites into populations according to subjective criteria which have never been explicitly defined. This has generated considerable discrepancies among sources with respect to the number of known populations within a given area (or across the species' range), to the extent that numbers are not comparable from one source to the next. The tendency, in the past, to treat each location as a separate population also artificially inflated the actual number of populations known.

The Natural Heritage Program collects information on occurrences of rare plants, animals, natural communities, and animal assemblages. Collectively, these are referred to as "elements of natural diversity" or simply as "elements." Locations of these elements are referred to as "element occurrences" (EO records). In recent years, NatureServe and its member Natural Heritage Programs have devised mapping standards to balance the need for fine-scale, highly site-specific EO records (required for monitoring and management) with the need to aggregate these records in meaningful units of conservation interest that may approximate biological populations (NatureServe 2002). Since USFWS does not maintain its own database of known locations of *Hexastylis naniflora*, it regards the NHP databases as the best repository for this information (USFWS 2010).

We delineate populations for the purposes of this SSA according to the NatureServe (2002) convention. Separation distances are a key component to delineating populations from EO records. For the dwarf-flowered heartleaf, we used the EO Data Standard which provides a Default Separation Distance of 1 km (~0.62 miles) for plant and animal elements that lack EO specifications, noting that situations involving dispersal barriers could involve even shorter distances. While gene flow declines over distance at different rates for different elements, the minimum default EO separation distance of 1 km has been accepted by the Network as the most suitable round-number metric-system approximation broadly applicable to many (but not all) situations. This results in several dwarf-flowered heartleaf populations being stand-alone EOs, as well as many populations being aggregates of several EOs.

Population Resiliency

For the dwarf-flowered heartleaf to maintain viability, its populations or some portion thereof must be resilient. Stochastic factors that have the potential to affect dwarf-flowered heartleaf include impacts to its habitat, particularly human development pressures, but also climate change and presence of invasive species. Other factors that influence the resiliency of dwarf-flowered heartleaf populations include abundance within populations, and habitat factors such as elevation, slope, aspect, and soil type. Influencing those factors are elements of dwarf-flowered heartleaf ecology that determine whether populations can grow to maximize habitat occupancy,

thereby increasing resiliency of populations. These factors and habitat elements are discussed below (Figure 3.1).

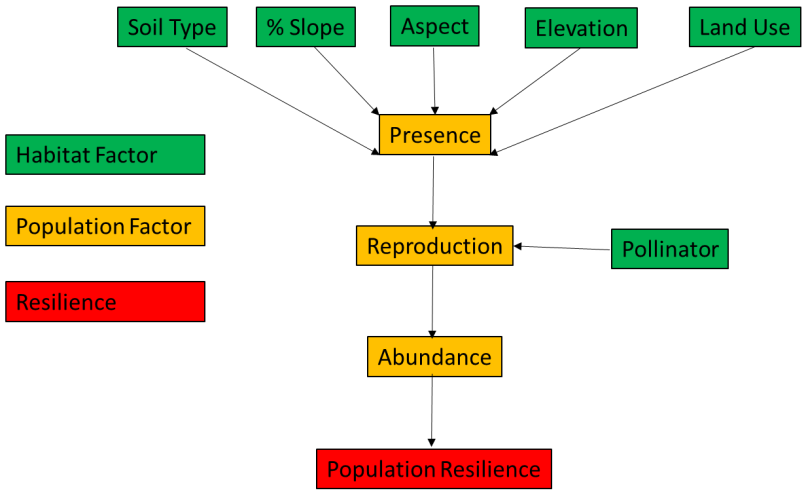


Figure 3.1. Conceptual diagram describing population and habitat factors influencing population resilience for dwarf-flowered heartleaf.

Habitat Factors: Slope, Aspect, Elevation, Soil, and Forest Type

A previous habitat suitability study attempted to quantify the habitat requirements for dwarf-flowered heartleaf (Wagner 2013). With this model in mind, and the input of species experts as to important habitat factors for the species, we used updated habitat data, as well as inclusion of updated EOs, to create a new habitat model to identify potential habitat throughout the species range. All source datasets and variables created are described in Appendix 3.

Source Data and Model Variables

Fifty-three, 10-digit hydrologic units (HUC) comprise the analysis extent (Figure 3.2). In North Carolina, it includes all 10-digit HUC that fall within the boundaries of 8-digit HUC with known occurrence of *Hexastylis naniflora*. In South Carolina, we also included all 10-digit HUC that fell within the boundaries of 8-digit HUC with known occurrence of *Hexastylis naniflora*, but

excluded the southern portions of the HUC-8 areas due to the boundaries being exceedingly large and far away from any known occurrences.

Hexastylis naniflora element occurrence data was obtained from the North Carolina Natural Heritage Program and the South Carolina Heritage Trust Program. Current populations of *Hexastylis naniflora* were identified by reviewing the last observed data in the database and excluding all populations that have not been observed since 2005 to remain consistent in our approach of assessing resiliency described previously. To represent these current population areas in Maxent, a raster cell center was retained for every 30 x 30 meter pixel that was situated within the current element occurrence data polygons.

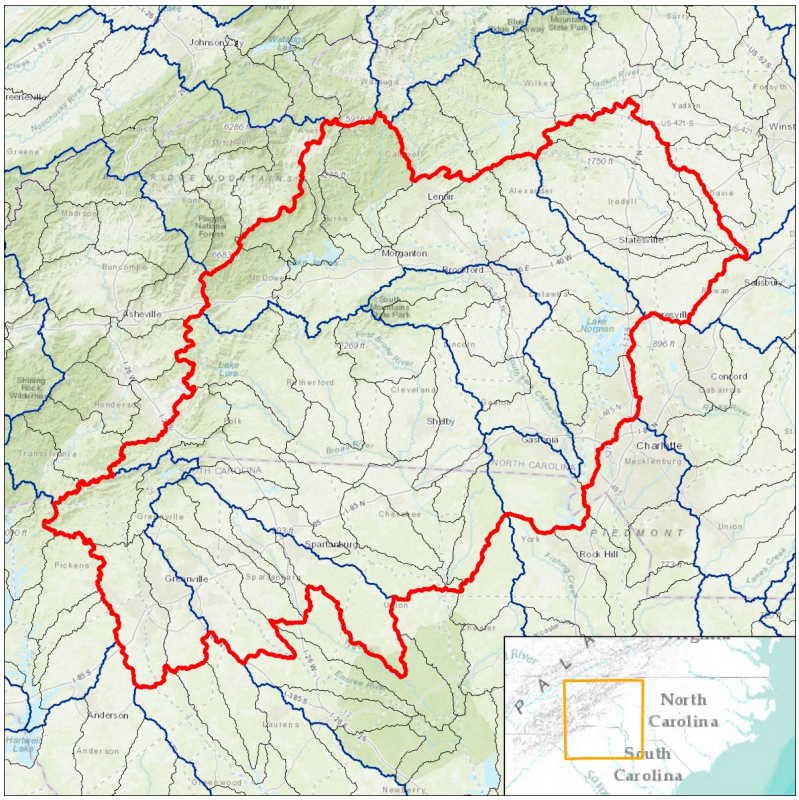


Figure 3.2. Analysis extent of the habitat model for *Hexastylis naniflora.* Red line indicates Maxent analysis extent, blue lines are 8-digit HUC boundaries, black lines are 10-digit HUC

boundaries. The orange line in the inset map indicates where the analysis extent is situated in North and South Carolina

Model Development

We used Maxent software (version 3.4.1) for species habitat modeling (Philips et al., 2018). An initial single model Maxent run was done to determine which variables could be excluded due to limited percent contribution to the model. Any variable that contributed less than 1% to the single model run results was excluded in the final model. The following variables were excluded: landcover diversity, canopy height, SSURGO drainage class, SSURGO hydrologic group, aspect 9-class, aspect 5-class, slope, solar radiation, and maximum annual temperature. It is interesting to note that a previous habitat modelling effort (Wagner 2013) included aspect and slope, whereas the Maxent model excluded these variables. This does not mean these variables are not important components of dwarf-flowered heartleaf habitat, but rather these variables did not significantly improve the model. Also, landform data was included, and perhaps landform, which includes components of aspect and slope combined is a more meaningful variable than aspect or slope independently.

For the final model, a 10-run replicate Maxent model was created using cross-validation. For replicate models, the occurrence data is randomly split into a number of equal-sized groups called “folds”, and separate models are created leaving out each fold in turn. The individual model runs are then averaged together to derive the final model.

Results

Figure 3.3 shows the model output. The minimum cutoff value (to determine if an area is considered potential habitat for a species) of 0.39 was determined by using the average 10th percentile training presence. The 10th percentile training presence uses the suitability threshold associated with the presence record that occurs at the 10th percentile of presence records (Phillips 2018). This value excludes some of the outlier population areas in the Maxent predictions to focus on the typical habitat conditions for this species. The total area ranked greater than 0.39 in the Maxent model was just 6.00% of the total analysis area (Table 3.1).

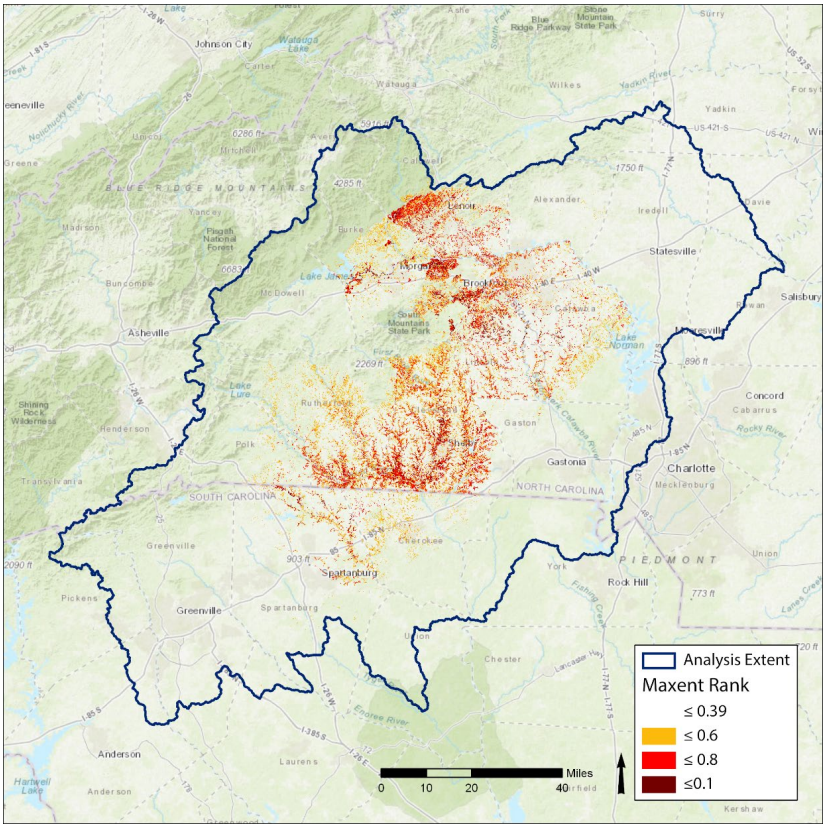


Figure 3.3. Maxent model output map

Table 3.1-Area estimates of the Maxent model

Maxent Score	Acres	Square Miles	Percent of Total
0.39 and greater	302,834.13	473.18	6.02%
0.6 and greater	128,273.52	200.43	2.55%
0.8 and greater	22,115.97	34.56	0.44%

The average area-under-curve (AUC) score for the replicate Maxent model is 0.86. The AUC is calculated from the receiver operating characteristic (ROC) plot. This value has a range of 0 – 1 and may be interpreted as a single test statistic that assesses model performance, indicating the

ability of the model to correctly classify the occurrence data used. The model performed well in its predictions, with a mean AUC of 0.86 (AUC value of 0.5 is no better than random; AUC<0.5 is worse than random; AUC>0.5 is greater predictive power than random; Baldwin 2009).

The Maxent output supplies estimates of the relative contributions of the environmental variables to the Maxent model (Table 3.2). SSURGO map unit key) is the top contributing variable. One hundred and thirty-five individual soil types are present within the polygon boundaries of the *Hexastylis naniflora* element occurrences. Many of these individual soil types are part of soil complexes and are separated by things such as percent slope, erosion, how stony/rocky, and amount of clay. The most common individual soil type was Meadowfield-Rhodhiss complex, 25 to 60 percent slopes, very stony (14.1% of total). However, collectively the Meadowfield soils only comprised 14.3% of all soils). The individual Pacolet soil types were very common and collectively comprise 36% of all soil types present. Woolwine, Rion, and Fairview soils were also collectively common, comprising 10.4%, 9.7%, and 8.8% of all soils present respectively.

Table 3.2. Percent contribution of the environmental variables

Environmental Variable	Percent Contribution
SSURGO map unit key	23.5%
Minimum Annual Temperature	17.8%
Average Annual Precipitation	15.7%
Landcover	12.9%
Landcover Majority	12.0%
Landcover Hexastylis Grouping	5.4%
Geomorphons	4.9%
Elevation	4.6%
Canopy Cover	3.2%

The minimum annual average temperature range in the analysis extent is 39 – 51 degrees Fahrenheit. The majority of the *Hexastylis naniflora* element occurrences (89%) are found at the 47 and 48 degrees. The average annual precipitation range in the analysis extent is 42 – 81

inches per year. The majority of the *Hexastylis naniflora* element occurrences (82%) are found in the 47 – 49 inches per year range.

Piedmont forested landcover habitats dominate the land area of the element occurrences. Southern Piedmont Dry Oak-Pine Forest – Hardwood Modifier (53%), Southern Piedmont Mesic Forest (9%), Southern Piedmont Dry Oak-Pine Forest (5.2%), Southern Piedmont Small Floodplain and Riparian Forest (4.4%), and collectively comprise 71% of the element occurrences area. Evergreen Plantation or Managed Pine (9%), Harvested Forest (7.2%), Developed, Open Space (5%), Pasture/Hay (2.1%) collectively comprise 22% of the total element occurrence area. The remaining 6 percent of element occurrence area is comprised of a mix of 14 other natural and disturbed landcover classes, but each at small percentages.
The landcover majority classification scheme reduces the total number of landcover classes present in the analysis extent from 23 to 11. Southern Piedmont Dry Oak-Pine Forest – Hardwood Modifier is still the dominant landcover class (58%). However disturbed categories are increased in area (sum total of 35%). Evergreen plantation or managed pine (12%) and Pasture/Hay (12%) are the only other categories that have at least 10% or greater area. The increase in disturbed landcover area representation in the landcover majority layer suggests that many *Hexastylis naniflora* population areas are situated in areas impacted by disturbed landcover. This is likely due to urban encroachment and increasing fragmentation of habitats.
The landcover *Hexastylis naniflora* grouping reveals the amount of disturbance present in *Hexastylis naniflora* population areas. Landcover classes grouped as disturbed comprises 27% of the total area. Mixed forest (deciduous and evergreen) comprises 58%, pasture/hay 12%, and hardwood forest 2%. Open water, evergreen and barren landcover groupings are all at less than 1% each.

Geomorphons revealed that the majority of *Hexastylis naniflora* element occurrence areas are situated in concave landforms. Geomorphon categories hollow (13%), valley (46%), and depression (10%) collectively comprise 69% of all *Hexastylis naniflora* population areas. Flat landforms comprise 15.5% of the area and convex landforms the remaining 15.5%.
Within the analysis extent, the range of elevation present is 335 – 5,265 feet. For *Hexastylis naniflora*, the prime elevation range is from 666 – 908 feet (53% of total element occurrence

area). A lesser elevation range is present from 935 – 1,184 (37% of total element occurrence area).

Canopy cover for the *Hexastylis naniflora* populations are dominated by Tree Cover 70-80% (20.2%) and Tree Cover 80-90% (63.9%). The rest of the canopy cover categories are 2% or less.

We performed a Kruskal-Wallis 1-way non-parametric Analysis of Variance (ANOVA) to investigate the relationship between Maxent scores and current resilience of populations (Table 3.3). There are significant differences in the average Maxent scores between the four resilience categories ($p = 0.04$) and the mean Maxent score increases as population resilience increases from low to very high. The model gives us some predictive ability regarding habitat suitability where higher Maxent scores, on average, result in higher population resilience.

Table 3.3 Results of the Kruskal-Wallis 1-way non-parametric ANOVA investigating relationships between Maxent scores and current resilience groups for dwarf-flowered heartleaf.

Groups	*Count*	*Mean Rank*
low	13	30.7
moderate	25	30.7
high	5	42.8
very high	28	45.7

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	4375.7	4	1093.92	2.65	0.0404
Within Groups	28036.3	68	412.30		
Total	32412.0	72			

Reproduction and Presence of Pollinators

The pollination of *Hexastylis* has not been well studied but the genus is thought to be pollinated by insects including flies, wasps, and thrips (Otte 1977). Additionally, Lengyel et al. (2010) described how, within the family Aristolochiaeae, more than 50% of the plant lineage is myrmecochorous (seed dispersal via ants). This supports Gaddy's work (1986), which found three species within the Hexastylis Heterophylla subgroup (*H. heterophylla, H. naniflora, and H. minor*), which employ myrmecochory as a method for seed dispersal.

Because the flower for this species is oftentimes partially or completely covered with soil and leaf litter, possibly inhibiting pollinator activity (Gonzalez 1972), there is still uncertainty in the pollination mechanism for dwarf-flowered heartleaf. Otte (1977) suggests that a variety of possible pollinators reside in this leaf litter, however, the calyx opening is considered to be far too small for efficient pollinating (Gaddy 1981). There are, however, invertebrates within this proposed size limit that could theoretically act as pollinators. It is possible that the species employs self-pollination, with or without a vector, or that cross-pollination occurs by a number of invertebrates. Jones et al. (2014) investigated pollination of dwarf-flowered heartleaf under a manipulative experimental design, and found that while insects may play a significant role in pollination, even without them, flowers managed to produce a partial seed set. However, two points need to be considered here. First, although flowers managed to produce seeds in the absence of insect pollinators, the efficiency of pollination decreased by almost 50%. Also, even if successful pollination occurs in the absence of insect vectors, the dispersal of plants amongst populations would be limited, and could result in decreased resilience due to genetic concerns such as limited gene flow and issues associated with potential inbreeding depression.

Abundance

The influence of stochastic variation in demographic (reproductive and mortality) rates is much higher for small populations than large ones. Stochastic variation in demographic rates causes small populations to fluctuate randomly in size. In general, the smaller the population, the greater the probability that fluctuations will lead to extinction. There are also genetic concerns with

small populations, including reduced availability of compatible mates, genetic drift, and inbreeding depression. Small populations of dwarf-flowered heartleaf have low resilience, leaving them particularly vulnerable to stochastic events.

As of 2016, the combined databases of the NCNHP and SCDNR contain 239 Element Occurrence Records (EORs) for *H. naniflora* (NCNHP 2016, SCDNR 2016). These EORs depict roughly 113 locations which are sufficiently geographically distinct to be regarded as proxies for populations of the species (See *Delineating Populations*). Thus, the total number of populations has increased more than four-fold (from 24 to 113) since the species was listed in 1989.

At this time, the largest known populations have been monitored by NCNHP and NCDOT. The estimates for entire populations are based on a consistent monitoring methodology developed by NCDOT, USFWS, and NCNHP with monitoring plots representing roughly 10% of a population. Populations were delineated to get a more accurate boundary and size of the area occupied. All rosettes are counted annually in each monitoring plot to estimate an extrapolated population size, based on the number and density in the plots. As a result of these efforts, better estimates of population sizes for the largest known populations are available, compared to when the last five-year review was completed in 2010 (Robinson and Padgett 2016).

The 113 EORs have been estimated to contain anywhere from a single rosette to over 100,000 rosettes. Appendix 1 was created by NCNHP (2016) to replicate the same format and population data as Table B2 of the most recent USFWS five-year review of *H. naniflora* (USFWS 2010), for comparison of changes since 2010, and summarizes the largest occurrences of *H. naniflora*, with the size of the population based on the number of rosettes it was last estimated to contain. The number of populations estimated to contain over 1,000 rosettes is 26. This is approximately 23% of the total known populations and many of these populations contain well over 1,000 individuals.

There are, however, 13 populations (12% of all known) that are simply known to be extant, with no available estimate of population size (NCNHP 2016, SCDNR 2016). If the most recent population estimates for each EOR are compiled across years of observation, the 113 populations

could conservatively be estimated to contain a collective total of more than 300,000 rosettes (NCNHP 2016, SCDNR 2016).

Population Trends

Although abundance is critical in assessing the resilience of dwarf-flowered heartleaf, trends in population growth can also be informative. Long-term growth trends are typically defined as the degree of change in population size over 200 years, whereas short-term growth is typically measured as that degree of change over a 10 year period. We lack a robust data set to assess trends at either of these time scales. However, from 2012-2016, NCNHP conducted systematic annual surveys of thirteen of the largest populations across the range.

Based on the results of the five-year monitoring efforts completed in 2016, nine out of thirteen populations remain stable during the five years of data collection (Robinson and Padgett 2016). The largest known population, Broad River: Henson's Creek, Brice, & Sandy Mush Outcrop in Rutherford County, NC, is estimated to have over 100,000 rosettes (Robinson and Padgett 2016). This large population consists of many scattered subpopulations on private property; two of the subpopulations are protected as a Registered Heritage Area, although Registry is a non-binding agreement with landowners that can be cancelled at any time (NCNHP 2018).

Two of the thirteen populations increased in numbers from 2012-2016: Cliffside Steam Station and Broad River: Floyds Creek, Long Branch. The Cliffside Steam Station is protected with a voluntary agreement with Duke Energy and was estimated to contain over 39,000 rosettes in 2016. The Broad River: Floyds Creek, Long Branch population is not at all protected, but was last estimated to consist of over 12,000 individuals in 2016 (Robinson and Padgett 2016).

Based on the results of recent surveys and a review of all known populations of *Hexastylis naniflora*, the overall trend over approximately 30 years is estimated to be declining 10-30%. This is estimated by a combination of documented declines of some populations, while many others appear to be remaining relatively stable, and some have increased.

Chapter 4: CURRENT CONDITIONS

Below we assess current resilience, representation, and redundancy as they relate to population and habitat factors known to be important for species viability. Based off of recent reports (Robinson and Padgett 2016; Robinson 2016), the species consists of 119 populations distributed across 12 counties in North Carolina and South Carolina. Populations are composed of both multiple EOs and stand-alone EO records. Recent genetic research discussed in Chapter 2, suggests that dwarf-flowered heartleaf, as originally described, is found in the southern portion of its presumed range based on current EO locations, and the northern portion could be a currently undescribed species (Figure 4.1; Estep pers. Comm. 2018). The genetic analysis to support this is complete, but a review of the morphology is ongoing and a new species has not yet been described (Estep pers. Comm. 2018). For the purpose of this SSA, we assume all EO detections are *H. naniflora*, and represent the best currently available scientific data.

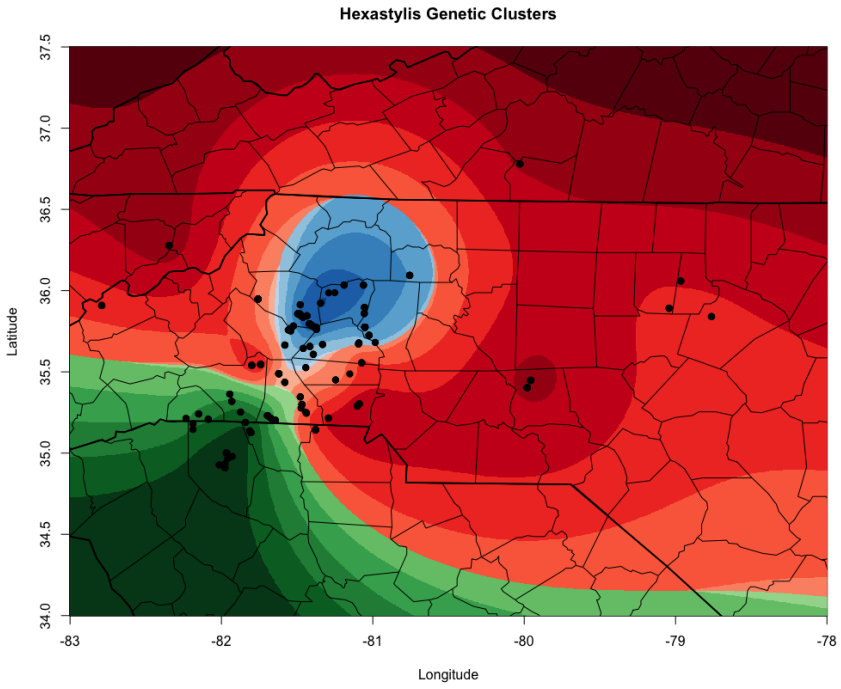


Figure 4.1. Recent genetic analyses detailing clustering of the genus Hexastylis. Black dots represent GIS locations of individual plants included in the genetic analysis. Green areas represent "true" *H. naniflora*; Blue represents a possible new species; Red represents other species in the genus (*H. minor, H. heterophylla*, etc.).

Current Population Resilience

Categorizing Resilience

For the purposes of this SSA, we use population size as the main driver of population resilience. The unit of measurement for population size in this species is a "clump" (rosette). As discussed previously, populations in North Carolina were delineated by NCNHP, whereas the Service defined populations in South Carolina. These delineations were based off of NatureServe criteria such as EO separation distance and intervening landscape matrix. EO data included a wide range of years since the species was last observed at a given location (1964-2017), so although recent reports suggest the species consists of 113 populations, some of that data is fairly outdated. For the purposes of this SSA, we only used EOs that were observed since 2005. We did this for several reasons. First, we did not want to go back too far and assume a population was still present. Second, we wanted to be consistent in what we considered "current" for both categorizing resilience and use in the habitat model (discussed later). Also, experts concurred that records as old as 12 years are still likely to persist. Finally, there was a natural break in the data at the year 2005, coinciding with the year the last five-year review was initiated, where the number of EOs dropped off significantly in the years 2004 and earlier. It is important to note that many of the populations that we excluded from our analysis may still persist on the landscape. In fact, many EOs for this species have persisted for decades, despite not having intervening surveys to confirm their persistence.

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Based on the criteria (excluding EOs prior to 2005), there are currently 78 populations distributed across the range of dwarf-flowered heartleaf, although this may be an underestimate as discussed above.

To determine overall resilience for populations, we used EO viability ranks and expert opinion to bin population size classes into corresponding resilience categories. EO viability ranks for the species include excellent, good, fair, poor, extant, historical, and failed to find. The primary factor in determining these ranks is EO size (as quantified by number of clumps). Condition of habitat (vegetation community and structure) and landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. Appendix 2 shows the NCNHP EO rank specifications for dwarf-flowered heartleaf. The EO rank specifications suggest good-excellent viability for populations consisting of at least 500 individuals, given there is sufficient high quality habitat; fair viability for populations consisting of 100-500 individuals, depending on habitat conditions; poor viability for populations consisting of less than 100 individuals. Recent reports (Robinson 2016; Robinson and Padgett 2016) focus monitoring studies on populations with greater than 1,000 individuals, populations that are assumed to be very viable. Because we do not have habitat level information for every population we assessed, we synthesized all of the above population size information and created four resilience categories as follows:

- Very high—populations with >1,000 individuals; very high probability of persistence for 20-30 years at or above the current population size.
- High—populations with 500-1,000 individuals; moderate-high probability of persistence for 20-30 years at or above the current population size.
- Moderate—populations with 100-500 individuals; low probability of persistence for 20-30 years at or above the current population size.
- Low—populations with <100 individuals; low probability of persistence for 20-30 years at or above the current population size, and moderate-high probability of extirpation.

Occupancy and Abundance

There are 78 populations of dwarf-flowered heartleaf that have been observed since 2005 (Table 4.1), and resilience of these populations is as follows: 28 (very high); 5 (high); 26 (moderate); 19 (low). Table 4.2 shows the contribution of each resilience category as follows: 36% (very high); 7% (high); 34% (moderate); 23% (low). When looking at cumulative percentages of resilience, it is interesting to note that 77% of all of the populations are classified as moderate to very high resilience (Table 4.2).

Table 4.1. Current populations of dwarf-flowered heartleaf and associated resilience across the species range. Abundance and last observation date based on Natural Heritage Program data (2018).

Site Name	State	County	Last Observed	Total plants	Resilience
Glade Creek, Alex County	NC	Alexander	2017	>1000	very high
Catawba River: Hoyle Crk-Micol Crk	NC	Burke	2013	>1000	very high
Island Creek Heath Bluff	NC	Burke	2016	>1000	very high
Gunpowder Creek: South of Hudson	NC	Caldwell	2012	>1000	very high
Peaked Top Rare Plant Site/Foothills Landfill	NC	Caldwell	2014	>1000	very high
Jacob Fork West Corridor	NC	Catawba	2012	>1000	very high
Murrays Mill/Upper Balls Creek NA	NC	Catawba	2013	>1000	very high
NCDOT TIP: R-2824	NC	Catawba	2015	>1000	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	NC	Catawba	2013	>1000	very high
Cowpens NBF - Site 1	SC	Cherokee	2016	>1000	very high
Cliffside Steam Station	NC	Cleveland/Rutherford	2016	>1000	very high
Broad River/Sandy Run NA	NC	Cleveland	2012	>1000	very high
Broad River: Brushy Creek	NC	Cleveland	2016	>1000	very high
Buffalo Creek: Kings Mountain Res	NC	Cleveland	2016	>1000	very high
Buffalo Creek: Tributaries N and S of SR 2047	NC	Cleveland	2012	>1000	very high
Rhyne Conservation Preserve	NC	Lincoln	2016	>1000	very high
Mill Creek Forest and Seep	NC	Polk	2016	>1000	very high
New Hope Springhead Swamp	NC	Polk	2016	>1000	very high
Big Horse Creek Rare Plant Site	NC	Rutherford	2015	>1000	very high
Broad River: Floyds Creek	NC	Rutherford	2016	>1000	very high
Davenport Road/Mountain View Rare Plant Site	NC	Rutherford	2016	>1000	very high
Facebook Site	NC	Rutherford	2016	>1000	very high
Floyds Creek Tributray Rare Plant Site	NC	Rutherford	2012	>1000	very high
New Bethel Rare Plant Site	NC	Rutherford	2015	>1000	very high
Richardson Creek trib above Toms Lake	NC	Rutherford	2016	>1000	very high
DNR Peters Creek Heritage Preserve	SC	Spartanburg	2016	>1000	very high
Taylor Blalock Res	SC	Spartanburg	2016	>1000	very high
Leepers Creek Heartleaf Site	NC	Lincoln	2006	>1000	very high
Little Gunpowder Creek Rare Plant Site 1	NC	Caldwell	2015	500-1000	high
Little Gunpowder Creek Rare Plant Site 2	NC	Caldwell	2015	500-1000	high
Northern Catawba County	NC	Catawba	2017	500-1000	high

Site Name	State	County	Last Observed	Total plants	Resilience
Rock Barn Solar Farm	NC	Catawba	2010-2011	500-1000	high
Buffalo Creek Rare Plant Site	NC	Cleveland	2012	500-1000	high
Third Creek Rare Plant Site	NC	Alexander	2010	100-500	moderate
Hickory Area	NC	Burke/Catawba/Caldwell	2016	100-500	moderate
Burke County - Drowning Creek UT	NC	Burke	2017	100-500	moderate
Simms Hill/Little River Uplands	NC	Burke	2015	100-500	moderate
Smith Cliff/Henry Fork River	NC	Burke	2015	100-500	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	NC	Catawba	2016	100-500	moderate
NCDOT TIP R-2824	NC	Catawba	2015	100-500	moderate
South Fork Catawba River, Henry Fork	NC	Catawba	2007	100-500	moderate
Broad River/Sandy Run NA	NC	Cleveland	2012	100-500	moderate
Brushy Creek Headwaters	NC	Cleveland	2014	100-500	moderate
First Broad River: Crooked Run Creek	NC	Cleveland	2010	100-500	moderate
No Business Creek, Boyd Tract	NC	Cleveland	2007	100-500	moderate
West Shelby Mesic Slope	NC	Cleveland	2016	100-500	moderate
UT of Kings Mountain Res	NC	Gaston	2012	100-500	moderate
Buffalo Shoals Creek	NC	Iredell	2014	100-500	moderate
Cat Square Heartleaf Forest	NC	Lincoln	2012	100-500	moderate
Collinsville (Hughes) Creek Slopes	NC	Polk	2016	100-500	moderate
Fox Knoll Farm	NC	Polk	2016	100-500	moderate
Forest City: Adj to Isothermal CC	NC	Rutherford	2010	100-500	moderate
Jonas Road Rare Plant Site	NC	Rutherford	2014	100-500	moderate
Knob Creek NA	NC	Cleveland	2005	100-500	moderate
Buffalo Creek	NC	Cleveland	2005	100-500	moderate
Kross Keys NA	NC	Polk	2005	100-500	moderate
Catawba River: North Fork Mountain Creek	NC	Catawba	2005	100-500	moderate
Catawba River: Lake James	NC	Burke	2006	100-500	moderate
Hogpen Branch Transplant Site	NC	Rutherford	2005	100-500	moderate
NCDOT TIP R-3603A	NC	Alexander	2017	<100	low
South Mountains Pleasant Grove Uplands	NC	Burke	2016	<100	low
Gunpowder Creek	NC	Caldwell	2012	<100	low
Killian Crossroads	NC	Catawba	2010	<100	low
Pott Creek	NC	Catawba	2012	<100	low
Beaverdam Crk at First Broad River	NC	Cleveland	2011	<100	low
Buffalo Creek: Potts Creek	NC	Cleveland	2012	<100	low
Buffalo Creek: Ravine	NC	Cleveland	2007	<100	low
Hickory Creek - UT (Shelby High School)	NC	Cleveland	2016	<100	low
Boulder Creek Subdivision - Jordan Road	SC	Greenville	2016	<100	low
Gateway Elementary School	SC	Greenville	2017	<100	low
Fanjoy Road Site	NC	Iredell	2015	<100	low
Levan Family Farm	NC	Iredell	2013	<100	low

Site Name	State	County	Last Observed	Total plants	Resilience
Lincoln County, SR-1314	NC	Lincoln	2014	<100	low
Northeast Lincolnton: UT Walker Branch	NC	Lincoln	2009	<100	low
Sandy Spring Church Springhead Swamp	NC	Polk	2005	<100	low
First Broad River: Hickory Creek	NC	Cleveland	2006	<100	low
Smith Cliff/Henry Fork River	NC	Burke	2005	<100	low
First Broad River: Beaverdam Creek Tribs	NC	Cleveland	2006	<100	low

Table 4.2. Population resilience categories by county for dwarf-flowered heartleaf.

County	Very High	High	Moderate	Low	Totals
Alexander	1		1	1	3
Burke/Catawba/Caldwell			1		1
Burke	2		4	2	8
Caldwell	2	2		1	5
Catawba	4	2	4	2	12
Cherokee	1				1
Cleveland/Rutherford	1				1
Cleveland	4	1	7	6	18
Gaston			1		1
Greenville				2	2
Iredell			1	2	3
Lincoln	2		1	2	5
Polk	2		3	1	6
Rutherford	7		3		10
Spartanburg	2				2
Totals	**28**	**5**	**26**	19	**78**
% of total	*36*	*7*	*34*	*23*	*100*
Cumulative %	*40*	*43*	*77*	*100*	--

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Population Trends

Although we lack an adequate past time series of abundance data for all populations to estimate growth rates or population trends, NCNHP conducted surveys of thirteen of the largest populations across the range of the species from 2012-2016. Table 4.3 shows the results of all of these surveys. Two populations show an increasing trend, nine show a stable trend, and two show a decreasing trend.

Table 4.3. Summary of population trends over 5 years of monitoring data for 13 of the largest populations of dwarf-flowered heartleaf across its range (from: Robinson and Padgett 2016).

Trend	Survey	Site	2016 estimated number of plants (Rosettes)	2016 area occupied (Acres)
Increasing	NCNHP	Cliffside Steam Station (EO 276)	39,535	52
	NCNHP	Broad River: Floyds Creek, Long Branch (EO 177)	12,687	5.67
Stable	NCNHP	Island Creek Bluff/Love Lady Site (EO 029)	50,481	61.76
	NCNHP	Rhyne Preserve (EO 302)	19,873	22.43
	NCNHP	Mills Creek Forest and Seep (EO 023)	1,733	1.39
	NCNHP	New Hope Springhead Swamp (EO 125)	12,235	5.03
	NCNHP	Broad River: Henson's Creek, Brice, & Sandy Mush Outcrop (EO099)	106,940	83.39
	NCNHP	Broad River: Cleghorn Creek, US 221 (EO 176)	6,750	7.24
	NCNHP	Cowpens National Battlefield (SC EO 016, 017, 018)	2,823	6.05
	NCNHP	Peters Creek Preserve (SC EO 011)	3,306	8.98
	NCNHP	Blalock Reservoir (SC EO 007, 031)	3,505	7.59
Decreasing	NCNHP	Second Broad River (Forest City Industrial Complex) (EO 154)	2,576	4.74
	NCNHP	South Fork Catawba River: Jacob Fork, Camp Creek (EO 158)	123	0.09

Current Species Representation

Representation describes the ability of a species to adapt to changing environmental conditions. We lack genetic and ecological diversity data to characterize representation for dwarf-flowered heartleaf. In the absence of species-specific genetic and ecological diversity information, we typically evaluate representation based on the extent and variability of habitat characteristics across the geographical range. However, the dwarf-flowered heartleaf has a very limited range, and after consulting with experts, we decided delineating representative units was not appropriate for this species.

Current Species Redundancy

For the dwarf-flowered heartleaf to maintain viability, the species also needs to exhibit some degree of redundancy. Species-level redundancy reflects the ability of a species to withstand catastrophic events, and is best achieved by having multiple, widely distributed populations relative to the spatial occurrence of catastrophic events. Redundancy for dwarf-flowered heartleaf is the total number and resilience of population segments and their distribution across the species range.

An important question when investigating redundancy for dwarf-flowered heartleaf is, "what exactly is a catastrophe?" We consider a catastrophe to be any population level disturbance that has the potential to negatively influence population resiliency outside of normal environmental and demographic stochasticity. Disturbances often act quickly, like hurricanes, and often with devastating effects, however they can also occur over long periods of time. A disturbance that occurs as a relatively discrete event in time is referred to as a "pulse" disturbance, while more gradual or cumulative pressures on a system are referred to as "press" disturbance. Both types of disturbances are part of the natural variability of dwarf-flowered heartleaf ecological systems, and must be considered when assessing redundancy. While there is certainly a variety of potential pulse disturbances for the species (timber harvest, hydrological alterations, road and right-of-way construction), the primary potential catastrophic disturbances are press disturbances from long term climate change, which have great potential to affect ecosystem processes and communities by altering the underlying abiotic conditions (DeWan et al. 2010).

As stated previously, there are 78 populations of dwarf-flowered heartleaf that have been observed since 2005 (Table 4.1), and resilience of these populations is as follows: 28 (very high); 5 (high); 26 (moderate); 19 (low). The populations are spread across the range, although a majority occur in North Carolina. Although, there appears to be adequate redundancy within the range of dwarf-flowered heartleaf to withstand the impacts of localized press catastrophic disturbances, the species range is very small, making it potentially vulnerable to long-term catastrophic events, such as climate change.

CHAPTER 5: INFLUENCES ON VIABILITY

Hexastylis naniflora populations occur in rapidly growing urban areas with expanding suburbs of Charlotte, NC, to the east; Hickory, NC, to the north; and Greenville and Spartanburg, SC, to the south. At the time of listing, it was determined that the species was most threatened by habitat loss due to the conversion of land to residential, commercial, and industrial use in these areas. In addition to threats associated with residential, commercial, and industrial development, other documented threats include habitat loss from land conversion to agricultural use, timber harvest, hydrological alterations from the damming of ponds, impacts from grazing cattle, ORV damage, trampling from foot traffic, invasive species, highway or road improvements, and erosion or siltation (NCNHP 2016, Robinson and Padgett 2016). Climate change may exacerbate these risk factors through changes in temperature and precipitation.

Threats were assessed for populations monitored by NCNHP during 2012-2016 (Robinson and Padgett 2016), and EOs were reviewed for other documented threats to populations. Indirect or direct threats that were observed, inferred, or suspected to have an impact on populations were recorded and assigned a ranking based on their severity, scope, and immediacy from field observations. The rank for each threat factor determines the overall value for each threat observed at each population. No significant changes in threats within populations were noted from 2012-2016. Threats observed during these years included development, incompatible forestry practices, agriculture, trampling, invasive exotic species, sedimentation, erosion, and road construction.

Below, we summarize primary threats to the viability of dwarf-flowered heartleaf. Primary influences will be carried forward in our future projections in the next section.

Human Population Change

Increasing human populations drive development. With increases in population, there will be increasing conversion of open space to more impervious cover, with a subsequent increase in roads and other associated infrastructure. Increases in roads and impervious cover have the potential to lead to habitat loss and/or fragmentation, a primary risk factor for dwarf-flowered

heartleaf. Tables 5.1-5.2 and Figures 5.1-5.2 show the estimated human population increases for North Carolina and South Carolina counties within the range of the species. The most populous counties include Greenville and Spartanburg in South Carolina, and Catawba, Gaston and Iredell counties in North Carolina.

Table 5.1-Human population projections for North Carolina counties within the range of dwarf-flowered heartleaf. *Source: North Carolina OSBM, Standard Population Estimates.*

County	2018	2023	2028	2033	2037
Alexander	38,609	39,244	39,686	39,992	40,169
Burke	90,865	93,124	95,382	97,644	99,452
Caldwell	83,919	86,723	88,689	91,126	92,870
Catawba	157,424	159,799	162,175	164,549	166,447
Cleveland	98,862	99,685	100,004	100,128	100,170
Gaston	221,112	227,667	237,344	245,276	252,388
Iredell	179,740	195,623	211,501	227,383	240,088
Lincoln	84,494	91,034	96,865	103,069	107,858
Polk	21,273	21,823	22,288	22,681	22,955
Rutherford	67,880	68,154	68,283	68,341	68,368

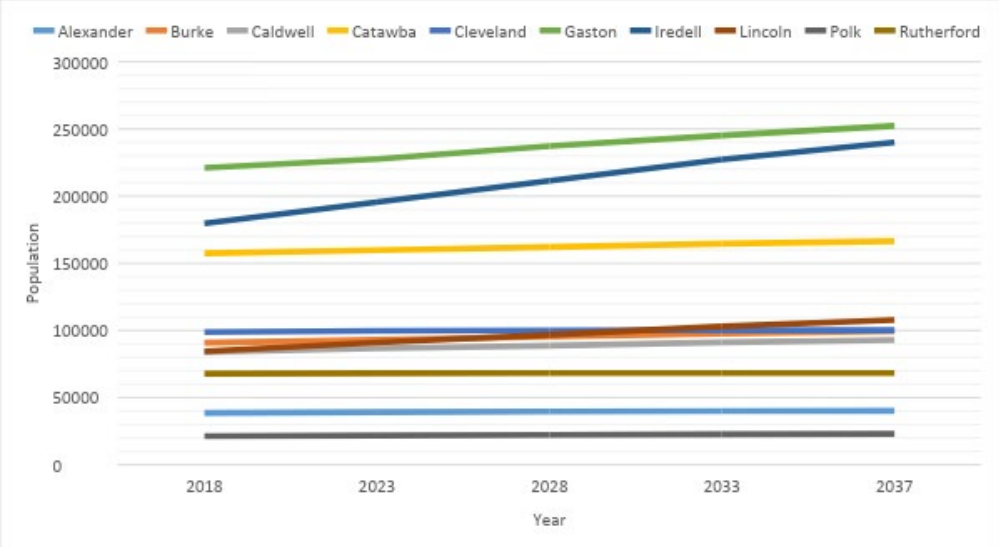


Figure 5.1- Human population projections for North Carolina counties within the range of dwarf-flowered heartleaf. *Source: North Carolina OSBM, Standard Population Estimates.*

Table 5.2- Human population projections for South Carolina counties within the range of dwarf-flowered heartleaf. *Source: U.S. Census Bureau, 2000 Census and 2007 Population Estimates. Population projections calculated by South Carolina Budget and Control Board, Office of Research and Statistics.*

County	2020	2025	2030	2035
Cherokee	61,760	64,760	67,350	70,170
Greenville	492,890	517,740	542,290	567,010
Spartanburg	310,220	323,550	336,810	350,110

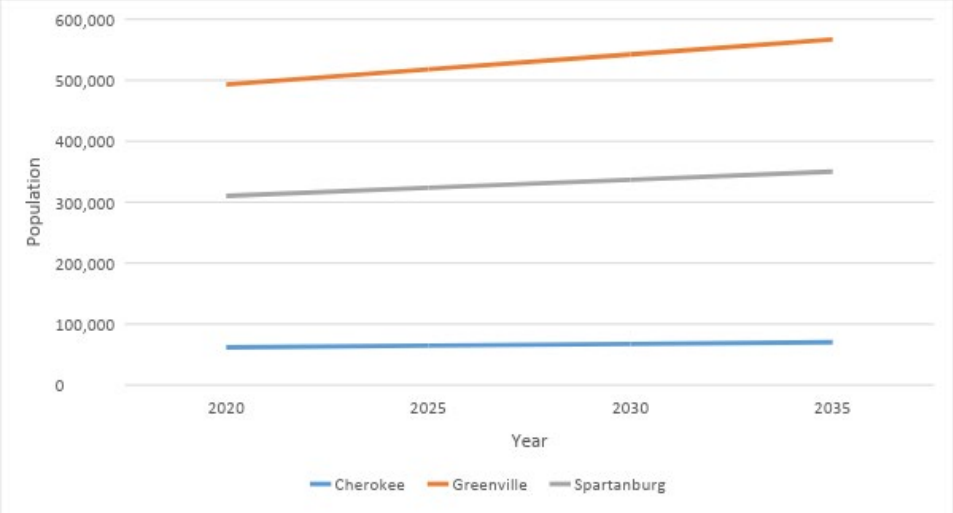


Figure 5.2. Human population projections for South Carolina counties within the range of dwarf-flowered heartleaf. *Source: U.S. Census Bureau, 2000 Census and 2007 Population Estimates. Population projections calculated by South Carolina Budget and Control Board, Office of Research and Statistics.*

Development

A large number of the known populations occur near expanding urban areas and are threatened by the residential, commercial, and industrial development associated with this growth. Populations occurring in more rural areas are threatened by habitat alteration or loss from land conversion to pasture or other agricultural uses, cattle grazing, intensive timber harvesting, residential construction, and construction of small ponds.

A 2010 review of existing NHP EOR data revealed that all or portions of 26 populations (24% of the total) had been directly or indirectly impacted through development projects or other causes such as trash disposal, expansion of residential lawns, cattle, or invasive exotics (NCNHP 2010; SCDNR 2010). Another 16 populations have been specifically reported to be threatened by one or more of these same sources. Therefore, threats have either occurred or are reasonably foreseeable within 42 of the 113 populations (corresponding to 37% of all known populations). Of these 42 populations, all or portions of 22 (50%) had been adversely impacted by activities

requiring ESA Section 7 consultation with the USFWS. The fact that nearly 20% of all known populations had been subject to formal Section 7 consultation illustrates the threats faced by the species.

In the same 2010 review, the most recurrent source of habitat destruction, and certainly the most common trigger for Section 7 consultations involving *H. naniflora* is road and bridge improvement projects. Ten of the 27 largest populations (containing more than 1,000 rosettes) have been the subject of Section 7 consultations between the USFWS and the NCDOT. Collectively, these projects have adversely impacted or are currently expected to impact some 22,135 rosettes. In most cases the Section 7 process has resulted in avoidance or minimization of adverse effects through relocation of plants and/or commitments of on-site protection to those plants remaining (post-construction) within NCDOT right-of-way (ROW).

Other forms of economic development have also resulted in the destruction or modification of habitats occupied by *H. naniflora*; in many cases, these activities have also required Section 7 consultations with the USFWS. Examples of these activities include the maintenance or expansion of hydroelectric and drinking water reservoirs, construction of an industrial development complex, and maintenance activities (in compliance with Federal Aviation Administration standards) at a regional airport. Collectively, these activities have involved the loss or relocation of several thousand rosettes.

Blalock Reservoir in Spartanburg County, South Carolina was once estimated to contain the largest population of *H. naniflora*, with over 11,000 rosettes reported here in 1997 (JJ&G, 1998). This population was the subject of a section 7 consultation as a result of a proposal to raise the elevation of Blalock Reservoir, which provides water supply storage to Spartanburg County and the City of Spartanburg (USFWS, 2001). Approximately one-third of this population was directly threatened by inundation, and the Federal agency committed to the relocation of some 3,054 rosettes to remaining areas of occupied habitat around the reservoir. At the conclusion of formal section 7 consultation, the USFWS anticipated that as many as 6,619 rosettes (assuming that all transplants survived) would be afforded protection through restrictive covenants placed on properties owned by the Spartanburg Water System (SWS) surrounding Blalock Reservoir.

However, this population was last reported to contain a mere 1,400 rosettes (Newberry, 2006), and has twice since been impacted by encroachments from adjacent landowners (Newberry, 2009; Schneider, 2006, and JJ&G, 2006). Some of these apparent declines could be partially an artifact of incomplete survey effort, in that the exhaustive surveys which led to the 1997 estimate (of 11,000 rosettes) have never been repeated. However, it seems unlikely that plants occurring on privately owned shoreline not subject to restrictive covenants would be any more stable than those occurring on properties specifically protected and managed for the species (by SWS).

Invasive Species and Woody Encroachment

Several of the known populations of dwarf-flowered heartleaf occur on steep ravine slopes which also support stands of mixed hardwoods with an understory of mountain laurel (*Kalmia latifolia*) or *Rhododendron spp*. These stands are often very dense and reduce the amount of light reaching the dwarf-flowered heartleaf plants growing below. Under these conditions the plants often show reduced vigor and reduced flower and fruit production. Careful, selective logging or natural tree fall and limited understory removal would open up these populations to more light. Additional light, if not accompanied by increased siltation from the intensive soil disturbances associated with forest clear-cutting, probably would benefit these populations (Gaddy 1981).

Invasive exotic plant species are rampantly spreading throughout riparian corridors and ravines across the range of this species (USFWS 2011). Invasive exotics such as English ivy (*Hedera helix*), Chinese privet (*Ligustrum* spp.), Japanese honeysuckle (*Lonicera japonica*) and Japanese Nepal grass (*Microstegium vimineum*) are known to threaten several populations; however, the scope and magnitude of this threat has not been comprehensively assessed. This threat requires active management in order to be successfully abated. At present, the majority of protected populations are secured against habitat conversion, but lack designated managers with the technical expertise and available resources (funding and personnel) to address this threat.

Climate Change

There is a growing concern that climate change may lead to increased frequency of severe storms and droughts (McLaughlin *et al.* 2002, p. 6074; Golladay *et al.* 2004, p. 504; Cook *et al.* 2004, p. 1015). Because typical habitats for this species include moist soils adjacent to creeks, streamheads, or along lakes and rivers, and plants have been observed to grow larger and have more frequent flowering in floodplains along rivers, lakes, and streams (Newberry 1993), specific effects of climate change to the dwarf-flowered heartleaf are likely related to changes in soil moisture associated with potential increases in drought.

Warming in the Southeast is expected to be greatest in the summer (NCCV 2016) which is predicted to increase drought frequency, while annual mean precipitation is expected to increase slightly, leading to increased flooding events (IPCC 2013, p.7; NCCV 2016). Changes in climate may affect ecosystem processes and communities by altering the abiotic conditions experienced by biotic assemblages resulting in potential effects on community composition and individual species interactions (DeWan et al. 2010, p.7).

Despite the recognition of potential climate effects on ecosystem processes, there is uncertainty about what the exact climate future for the Southeastern US will be and how the ecosystems and species in this region will respond. Although climate change was not a factor leading to the original listing of the species, it should be recognized that the greatest threat from climate change may come from synergistic effects. That is, factors associated with a changing climate may act as risk multipliers by increasing the risk and severity of more imminent threats. As a result, impacts from rapid urbanization in the region might be exacerbated under even a mild to moderate climate future.

Regardless of a pessimistic, optimistic, or status quo climate future, the following systematic changes are expected to be realized to varying degrees in the Southeastern US (IPCC 2013):

- More frequent drought
- More extreme heat (resulting in increases in air and water temperatures, Figure 5-3)

- Increased heavy precipitation events (e.g., flooding)
- More intense storms (e.g., frequency of major hurricanes increases)
- Rising sea level and accompanying storm surge

In recent years, the Southeast has experienced moderate to severe droughts that many observers have implicated in population declines and poor transplant survivorship (NCNHP, 2010). A wildfire, presumably brought on or at least exacerbated by drought conditions, burned portions of one of the largest known populations in 2009 (Foothills Landfill in Caldwell County; Golder and Associates, 2009). Accelerated climate change is expected to increase the frequency and extent of drought conditions across the southeast (Karl, et al. 2009). The extent to which these climate changes will significantly affect populations of dwarf-flowered heartleaf is currently unknown.

Appendices 4a and 4b gives summary reports on historical and future predicted climate parameters from the USGS National Climate Change Viewer for both North Carolina and South Carolina. As discussed above, the trend for these States is consistent with the general trend in the Southeast: more frequent drought, more extreme heat, and increased precipitation events. If these predictions hold true, dwarf-flowered heartleaf habitat would likely be impacted through increased evaporative rates and decreased soil moisture (Appendices 4a and 4b), increased potential for catastrophic wildfire events, as well as potential disruption of stream bank morphology through increased flooding events. Our habitat model indicates a preferred temperature and precipitation range, indicating that the species would be sensitive to a changing climate.

Chapter 6: FUTURE CONDITION

Future Considerations

Our analysis of the past, current, and future influences on what the dwarf-flowered heartleaf needs for long term viability revealed that there are several influences that pose risks to future viability of the species. These risks are primarily related to habitat changes from development and long term climate change. We use projections of urban development to assess potential habitat loss and fragmentation. We also considered how climate change may exacerbate the impacts of development in a qualitative fashion using a narrative approach.

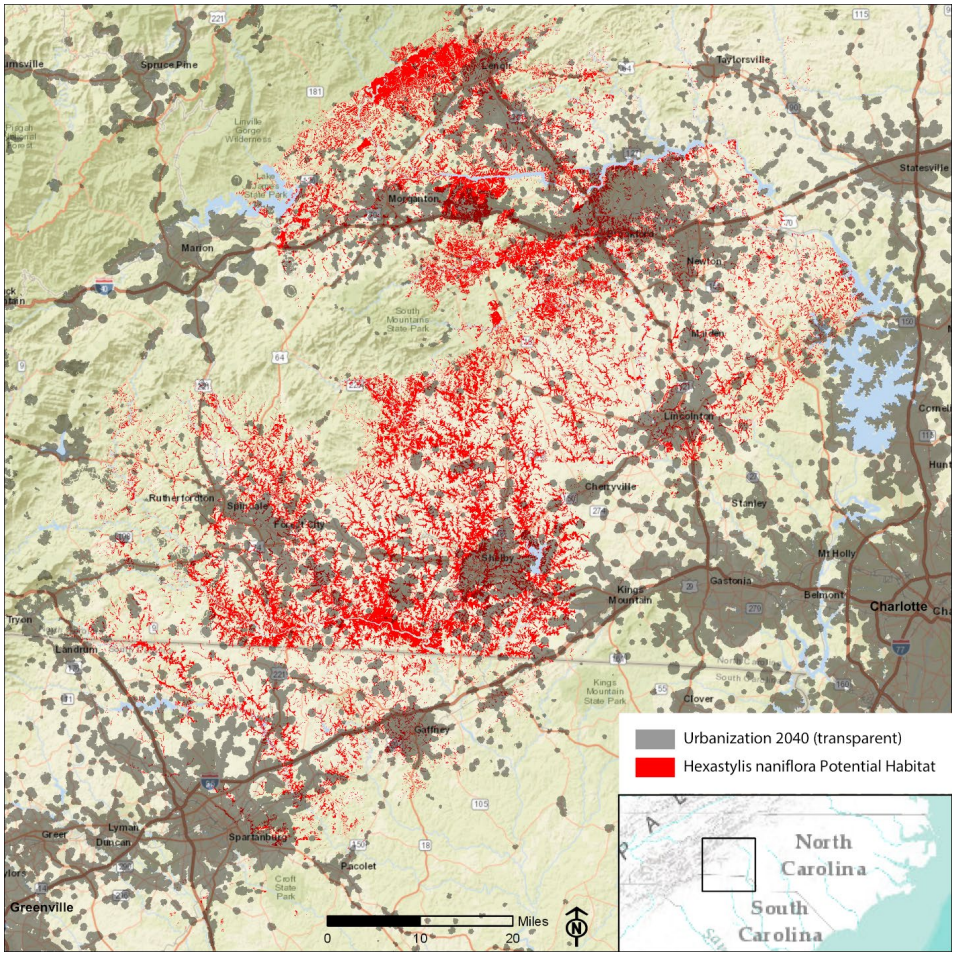
Because the actual impacts of urbanization are unknown, we use three scenarios, projected out to the year 2040, to capture the uncertainty related to the potential impacts to each population's resiliency: Status Quo, Targeted Conservation, and High Development. Results of future projections within each scenario are focused on current populations and potential habitat identified by the Maxent model as described below. Based on the life span of the species, expert input, development as the key risk factor brought forward, uncertainty about future conditions, and lack of knowledge about where additional populations may persist on the landscape, we chose to project populations out to the year 2040 under each scenario, but no further.

In constructing our scenarios, we considered two main influences by which species viability projections could be affected: location of additional populations (positive influence) and habitat loss and fragmentation due to urban development (negative influence). Habitat quantity can be negatively impacted by development or land use change (particularly on private lands) or positively impacted by land acquisition, restoration, and/or introductions into unoccupied sites that already have suitable habitat.

We use the Slope, Land cover, Exclusion, Urbanization, Transportation, and Hillshade (SLEUTH) models to determine areas predicted to be urbanized by 2040 (Figure 6.1). SLEUTH is a cellular automata model that applies transition rules to the states of a gridded series of cells, and in this case the transition is that from undeveloped to developed land cover, otherwise

known as urbanization, and has been successfully applied worldwide over the last 15 years to simulate land use change (Clarke 1995).

Figure 6.1. Results of the SLEUTH model with *Hexastylis naniflora* potential habitat predicted by the MAXENT model overlaid.



The SLEUTH model predictions are broken down by probabilities of urbanization, ranging from 0-100%. We chose 80% probability as our cutoff, as this cutoff has been used by USGS and other SSAs, and this threshold represents a highly likely outlook for urbanization of the

landscape. To forecast viability using urban development projections, we assessed the following:

- % increase in projected development (SLEUTH probability of urbanization >80%) within current populations (from Current Conditions—68 populations)
- % increase in projected development (SLEUTH probability of urbanization >80%) within areas delineated as potential habitat by the Maxent habitat model

There is no data available on the exact relationships between urbanization and the impacts to dwarf-flowered heartleaf. We do know that several current populations are located in areas with surrounding urban landscapes. We also know that urban development has led to extirpation of populations in the past through loss of habitat. Because of this uncertainty, we attempted to capture unknowns in two ways. First, our scenarios reflect a range of potential impacts from urban development. Also, we used two thresholds for % increase in urban development to capture potential deleterious effects: 25% and 50%. Our assumptions were that very small increases in development are unlikely to negatively impact populations; development increase of at least 25% of the area of current populations was likely to have some negative impacts; development increase of at least 50% was likely to have significant impacts to populations. We also assume that populations currently on protected lands are likely to see smaller impacts from urbanization compared to those that are not protected, but protection status (perpetuity vs non-perpetuity) matters. For example, Registered Heritage Areas are non-binding agreements with a land owner, and if the land changes ownership, or the owner decides not to continue with the agreement, then the Registry is no longer valid. Appendix 5 shows the protection status of each delineated population which helped to inform our assessment of resilience under each scenario.

Commented [RNR1]: Is this Appendix 4?

We also assessed potential positive effects by integrating the potential location or rediscovery of additional populations throughout the range into two of our scenarios: Targeted Conservation and Status Quo. We believe this is appropriate for several reasons. First, location of new EOs is common; many of the populations we consider for Current Conditions include detections that have occurred within the last few years. Second, we did not include many older detections (i.e. only included detections since 2005), although many of those detections are likely to persist. Dwarf-flowered heartleaf is a long-lived perennial, and several EOs have been revisited

after more than 10 years and the species was present. For example, one such EO was first observed in 1957 and next observed in 2001. It seems as long as suitable habitat is still present it is reasonable to assume that the species is still there. Finally, there is plenty of predicted suitable habitat present within older EOs based on the Maxent model predictions that were not included as current populations.

The first step in identifying additional areas where dwarf-flowered heartleaf is likely to be found in the future, was to identify EOs from populations that were last observed prior to 2005 (i.e. our cut-off for current populations). Although our focus is on older EOs, where dwarf-flowered heartleaf is likely to persist into the future, we also included current EOs (2005-current) in our analysis because we were interested in how the older EOs compared to those known to be persisting on the landscape since 2005. Also, by including older EOs that are within current delineated populations, we can investigate whether current populations might be predicted to contain more plants than the most recent abundance estimate. For example, many of our current populations consist of multiple EOs, and we only considered EOs that were detected from 2005-current. If these older EOs within current populations that were not included in our Current Condition assessment are found to be likely to persist, then it is possible we underestimated the resilience of that population.

Once these older EOs were identified, we created a 1,000 meter buffer around the population and calculated a number of useful metrics including resilience category based on the last known abundance estimate, Maxent habitat model metrics, and the results of the SLEUTH model to further refine a list of potential sites where the species would likely be found to persist within our 20-25 year projection window. Resilience categories were assessed using last known abundance in the same way as populations assessed in the Current Conditions section (i.e. low = less than 100 individuals; moderate = 100-500 individuals; high = 500-1000 individuals; very high = greater than 1,000 individuals). We assessed two habitat metrics for these older EOs: average Maxent score and % Maxent classified as 0.8-1.0 score. Average Maxent score was calculated by taking the mean Maxent score of all potential habitat within the 1,000 foot buffer. The % Maxent classified as 0.8-1.0 represents the percentage of all potential habitat within the 1,000 foot buffer that falls within the highest habitat class. Together, these two habitat metrics give

general estimates of habitat quantity and quality. Finally, we calculated the total percentage of the 1,000 foot buffer around each EO that is projected to be urbanized in the year 2040, which helps capture the primary risk factor of development when assessing the areas where dwarf-flowered heartleaf is likely to persist. Table 6.1 (North Carolina) and 6.2 (South Carolina) show all of the EOs we considered and the corresponding metrics associated with resilience categories, urban development, and habitat scores.

Table 6.1. North Carolina raw data for metrics assessed to investigate potential sites where dwarf-flowered heartleaf was historically found and is likely to persist. Resilience categories are based on last known abundance estimates as follows: 1 = low; 2 = moderate; 3 = high; 4 = very high. MAXENT Average Mean refers to the mean Maxent score of all potential habitat. % Maxent classified as 0.8-1.0 represents the percentage of all potential habitat that falls within the highest habitat class. % Urban Development refers to the percentage of the 1,000 foot buffer around the EO that is projected to be urbanized in the year 2040.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	2	34	1	3
2				
3	2	22	0	10
4	2	22	0	7
5	2	21	0	0
6				
8	1	27	0	6
9	3	44	4	0
10	4	33	2	0
11				
12	4	54	10	0
13	1	31	1	30
14	2	61	16	7
15				
16	4	18	0	47
17	1	50	13	0
18	1	36	8	2
19				
20	2	22	1	88
21	2	34	4	54

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
23	4	15	0	8
25	1	47	15	30
27				
28	2	43	12	29
29	4	43	8	30
30	4	27	2	74
31	4	30	3	86
32	2	34	2	47
33	2	33	3	0
34	1	49	13	63
35	1	42	10	23
36	1	19	0	12
37	4	41	6	17
38	2	14	0	46
39	1	19	0	11
40	2	37	2	32
44	4	20	0	59
45	1	27	5	13
46	3	42	6	6
47	1	28	1	96
48	1	14	0	12
49	4	61	14	5
50				
51	4	52	11	18
52	2	46	4	0
53	1	35	4	24
54	1	35	1	10
55	4	30	0	0
56	2	40	2	6
57	2	21	0	80
58	1	42	5	0
59	2	11	0	49
60	1	25	0	2
61	3	41	0	0
62	2	34	0	0
63	1	27	0	6
64	2	39	9	11
69	2	46	11	19
70	2	38	1	0
71	2	30	2	0

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
72	2	52	14	0
73	4	60	17	1
74	3	65	14	4
75	4	47	6	9
76	4	42	4	10
77	3	31	1	27
79	2	39	1	0
80	1	43	4	15
83	2	17	0	11
84	2	13	0	1
85	2	42	4	5
87				
89	2	13	2	0
90	2	28	2	0
91	1	49	5	0
92	2	15	0	30
106	4	39	4	38
107	1	14	0	40
113	4	46	4	7
114				
115	2	37	3	26
118	3	42	0	9
121	2	41	5	0
122	1	12	0	39
124	1	12	0	9
125	4	15	0	41
130	2	17	0	24
149	4	64	17	3
151	2	16	0	27
154	4	30	1	22
157	2	20	0	0
158	3	36	7	5
159	4	62	24	60
160	3	62	24	32
161	4	64	28	30
162	1	32	2	58
163	2	15	0	56
164	3	18	0	52
165	1	13	0	56
166	1	14	0	40

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
167	4	30	0	20
168	4	19	0	34
169	1	30	0	12
170	2	17	0	40
172	1	39	3	7
173	2	30	1	48
174	1	42	4	16
175				
180	2	21	1	0
181	4	29	2	0
182	4	45	4	0
183	2	15	0	5
184	4	19	0	19
187	2	20	1	35
188	2	24	0	53
189	1	25	0	14
190				
191	2	34	2	0
192	2	35	3	0
193	2	36	7	6
194	4	51	14	18
195	1	21	0	96
196	1	23	4	67
197	4	35	8	38
198	2	32	6	25
199	2	29	5	43
200	1	26	2	87
201	1	39	4	63
202	4	35	4	85
203	1	43	4	49
204				
205	2	43	1	49
206	1	37	3	66
207	2	33	2	85
208	1	32	1	67
209	2	33	2	94
210				
212	1	37	3	85
213	1	36	4	72
219	1	32	1	4

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
222	2	23	3	7
223				
224	1	22	3	17
225	2	24	2	12
227	4	55	2	5
229	2	28	0	21
230	1	54	15	13
231	1	41	7	0
233	4	53	12	14
235	2	50	8	6
236	2	62	14	5
237	2	67	16	5
238	4	51	15	0
239	2	63	14	5
240	1	57	18	0
241	2	62	16	3
242	1	53	9	0
246	1	62	13	4
249	4	47	5	0
250	4	45	4	0
251	4	43	4	0
254	2	54	18	6
255				
256	2	54	15	13
258	3	19	0	51
259	4	25	0	0
262	4	29	2	50
263				
264				
265				
266				
267	2	29	1	0
268	1	33	2	0
269	2	49	17	0
270	1	46	18	1
271	1	26	7	0
272	1	33	0	71
273	2	28	2	0
274	2	50	8	0
275	2	12	0	0

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
276	4	42	5	21
277				
278				
279	1	32	4	89
280	2	64	30	30
281	1	64	31	36
282	1	64	31	51
283	1	65	34	59
284	1	64	35	45
286				
287	2	15	0	35
291	2	21	1	84
292	2	14	0	83
293	1	8	0	16
294	2	36	4	61
296	2	3	0	5
297				
298	2	16	0	1
299	1	12	0	0
300	1	9	0	18
303	2	31	0	0
304	2	31	0	0
305	1	30	2	0
306	1	4	0	53
308	2	15	0	3
309	1	5	0	0
310	4	58	26	35
311	2	15	0	0
312	4	17	0	57
313				
314				
315	1	36	4	61
317	1	15	0	53
318	2	34	4	52
319	4	43	4	10
320	4	41	6	98
321				

Min	1	3	0	0
Max	4	67	35	98

Table 6.2. South Carolina raw data for metrics assessed to investigate potential sites where dwarf-flowered heartleaf was historically found and is likely to persist. Resilience categories are based on last known abundance estimates as follows: 1 = low; 2 = moderate; 3 = high; 4 = very high. MAXENT Average Mean refers to the mean Maxent score of all potential habitat. % Maxent classified as 0.8-1.0 represents the percentage of all potential habitat that falls within the highest habitat class. % Urban Development refers to the percentage of the 1,000 foot buffer around the EO that is projected to be urbanized in the year 2040.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	2	21	0	0
2	2	1	0	4
3				
4	1	13	0	10
5	2	0	0	64
6	1	0	0	36
7	4	27	0	35
8	2	0	0	14
9				
10				
11	4	14	0	52
12				
13	1	7	0	100
14	4	14	0	43
15	1	0	0	4
16	4	22	0	38
17	4	22	0	33
18	3	19	0	52
19	1	12	0	65
20	2	5	0	100
21	3	5	0	90
22	1	0	0	0
23				
24	1	4	0	3
25	1	14	0	48
26	4	12	0	65
27	4	18	1	40

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
28	4	19	1	49
29				
30	2	7	0	88
31	4	0	0	0
32	2	7	0	93
33	2	2	0	20
34	1	31	3	1
35	1	23	1	53
36	2	6	0	0
37	1	24	2	0
38	4	5	0	37
39	1	6	0	1
40	2	6	0	20
41	1	11	0	87
42	2	3	0	6
43	1	23	0	43
44				
45				
46	1	10	0	96
47				
48				
49	3	8	0	70
50	2	5	0	54
51	1	0	0	35
52	3	0	0	0
53	2	10	0	66
54	2	9	0	91
55	1	4	0	99
56	2	14	0	96
57	3	15	0	38
59	2	4	0	17
60	4	17	1	12
Min	1	0	0	0
Max	4	31	3	100

Next, we implemented a set of ranking rules using the data from Tables 6.1 and 6.2 to further assess which EOs had a higher likelihood of persistence on the landscape. We used SMART

methodology to quantify and implement our ranking rules. Because the metrics of interest vary in data type (i.e. categorical vs continuous) and range of values (i.e. not all continuous variables have the same maximum and minimum), our first step was to normalize all of the data on a scale of 0-100. Normalization techniques allow for aggregation of criteria with numerical and comparable data. We decided to analyze North and South Carolina data separately because the Maxent model predicts habitat differently across state lines due to differences in soil classification. We weighted each variable according to our opinion of the level of contribution each variable had to the probability of persistence of that particular EO. This resulted in abundance having the highest weight (100%), with habitat (as calculated by average Maxent score) and urbanization given relatively similar weighting (80%). The results of the normalization procedure and weighting can be found in Tables 6.3 and 6.4.

Table 6.3. Normalized scores for SMART analysis of North Carolina EOs and weighting scores. Resilience category represents the normalized scoring based on the last known abundance (0=low; 33=moderate; 67=high; 100=very high); MAXENT Mean is the normalized score of the average Maxent rank of all potential habitat; MAXENT percent 0.8-1 represents the normalized score of the percentage of potential habitat that falls within the highest rank category; 80% or greater SLEUTH Percent of Total is the total amount of current urbanization plus predicted urbanization at year 2040 (>80% probability) from the SLEUTH model.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	33	49	3	97
2				
3	33	30	0	90
4	33	29	0	93
5	33	28	1	100
6				
8	0	37	0	94
9	67	65	11	100
10	100	46	6	100
11				
12	100	80	28	100
13	0	43	2	69
14	33	90	44	93
15				

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
16	100	23	0	52
17	0	73	37	100
18	0	52	22	98
19				
20	33	30	3	11
21	33	48	12	45
23	100	19	0	92
25	0	68	42	69
27				
28	33	62	33	71
29	100	63	22	69
30	100	38	5	24
31	100	43	8	12
32	33	48	5	52
33	33	47	8	100
34	0	73	37	35
35	0	60	29	77
36	0	25	0	88
37	100	60	17	82
38	33	17	0	53
39	0	24	0	89
40	33	54	7	67
44	100	26	1	40
45	0	37	14	86
46	67	60	18	94
47	0	39	2	2
48	0	17	0	88
49	100	91	39	95
50				
51	100	77	31	82
52	33	68	11	100
53	0	50	11	76
54	0	49	1	90
55	100	43	0	100
56	33	58	7	94
57	33	28	0	19
58	0	60	15	100
59	33	12	0	50
60	0	34	1	98
61	67	59	1	100

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
62	33	49	0	100
63	0	38	0	94
64	33	56	24	88
69	33	67	31	80
70	33	55	3	100
71	33	42	5	100
72	33	77	41	100
73	100	89	48	99
74	67	97	41	95
75	100	69	16	91
76	100	61	11	89
77	67	43	2	72
79	33	56	4	100
80	0	62	11	85
83	33	22	0	89
84	33	15	0	99
85	33	61	10	95
87				
89	33	15	5	100
90	33	38	5	100
91	0	71	13	100
92	33	18	0	70
106	100	56	10	61
107	0	16	0	59
113	100	68	11	93
114				
115	33	53	8	74
118	67	61	1	91
121	33	59	13	100
122	0	14	0	60
124	0	13	0	91
125	100	19	0	58
130	33	22	0	76
149	100	95	49	97
151	33	20	0	72
154	100	41	2	78
157	33	26	0	100
158	67	51	20	95
159	100	92	69	39
160	67	92	69	68

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
161	100	95	79	69
162	0	45	7	41
163	33	18	0	43
164	67	24	0	47
165	0	16	0	43
166	0	16	0	59
167	100	41	0	79
168	100	25	0	65
169	0	42	0	88
170	33	22	0	60
172	0	56	8	93
173	33	42	3	52
174	0	62	12	84
175				
180	33	28	2	100
181	100	41	6	100
182	100	66	12	100
183	33	18	1	95
184	100	24	0	81
187	33	27	2	64
188	33	33	0	46
189	0	33	1	86
190				
191	33	48	7	100
192	33	49	10	100
193	33	51	19	94
194	100	75	40	81
195	0	28	0	3
196	0	30	10	32
197	100	50	24	61
198	33	45	18	74
199	33	41	14	56
200	0	35	6	11
201	0	56	11	36
202	100	49	11	13
203	0	62	11	50
204				
205	33	62	4	50
206	0	52	8	33
207	33	47	4	14

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
208	0	45	4	32
209	33	46	5	4
210				
212	0	53	9	14
213	0	52	11	27
219	0	45	2	96
222	33	31	9	92
223				
224	0	29	8	83
225	33	32	6	88
227	100	81	7	95
229	33	39	0	79
230	0	80	44	87
231	0	59	20	100
233	100	79	34	86
235	33	74	22	94
236	33	93	41	95
237	33	100	46	95
238	100	74	41	100
239	33	94	40	94
240	0	85	51	100
241	33	93	47	97
242	0	78	27	100
246	0	93	38	95
249	100	68	13	100
250	100	65	12	100
251	100	62	11	100
254	33	80	51	93
255				
256	33	80	44	87
258	67	25	0	48
259	100	34	0	100
262	100	41	6	49
263				
264				
265				
266				
267	33	41	3	100
268	0	46	7	100
269	33	72	49	100

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
270	0	67	52	99
271	0	35	19	100
272	0	47	0	28
273	33	39	7	100
274	33	73	23	100
275	33	14	0	100
276	100	61	14	79
277				
278				
279	0	46	11	9
280	33	95	85	70
281	0	95	88	64
282	0	96	88	48
283	0	97	95	40
284	0	95	100	54
286				
287	33	18	0	64
291	33	28	4	14
292	33	16	0	16
293	0	7	0	84
294	33	52	11	38
296	33	0	0	95
297				
298	33	20	0	99
299	0	13	0	100
300	0	9	0	82
303	33	44	1	100
304	33	43	0	100
305	0	42	5	100
306	0	1	0	46
308	33	18	0	97
309	0	3	0	100
310	100	86	75	64
311	33	19	0	100
312	100	22	0	42
313				
314				
315	0	51	10	38
317	0	19	0	46
318	33	48	12	47

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
319	100	63	12	89
320	100	60	17	0
321				

Weights			
100	60	20	80

Table 6.4. Normalized scores for SMART analysis of South Carolina EOs and weighting scores. Resilience category represents the normalized scoring based on the last known abundance (0=low; 33=moderate; 67=high; 100=very high); MAXENT Mean is the normalized score of the average Maxent rank of all potential habitat; MAXENT percent 0.8-1 represents the normalized score of the percentage of potential habitat that falls within the highest rank category; 80% or greater SLEUTH Percent of Total is the total amount of current urbanization plus predicted urbanization at year 2040 (>80% probability) from the SLEUTH model.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	33	67	14	100
2	33	2	0	96
3				
4	0	42	3	90
5	33	0	0	36
6	0	0	0	64
7	100	87	2	65
8	33	0	0	86
9				
10				
11	100	43	0	48
12				
13	0	23	0	0
14	100	43	0	57
15	0	0	0	96
16	100	72	1	62
17	100	70	1	67
18	67	62	0	48
19	0	37	0	35

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
20	33	16	0	0
21	67	15	0	10
22	0	1	0	100
23				
24	0	13	0	97
25	0	44	0	52
26	100	40	0	35
27	100	56	18	60
28	100	60	28	51
29				
30	33	22	0	12
31	100	0	0	100
32	33	23	0	7
33	33	5	0	80
34	0	100	100	99
35	0	75	34	47
36	33	18	0	100
37	0	78	66	100
38	100	16	0	63
39	0	19	0	99
40	33	18	0	80
41	0	36	0	13
42	33	10	0	94
43	0	72	0	57
44				
45				
46	0	32	0	4
47				
48				
49	67	27	0	30
50	33	16	0	46
51	0	1	0	65
52	67	0	0	100
53	33	33	0	34
54	33	29	0	9
55	0	13	0	1
56	33	43	0	4
57	67	47	8	62
59	33	13	0	83
60	100	53	21	88

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
	Weights			
	100	60	20	80

To determine a final rank for likelihood of persistence, we calculated a weighted sum for each EO. We then converted the weighted sum to a final rank value that ranged from 0-100. Finally, we determined the top 10% or 90th percentile, and top 25% or 75th percentile ranking for EOs in each state. Table 6.5 summarizes the final ranks and top 10% and 25% percentile ranks for North and South Carolina. We will include the top 10% in the status quo scenario, and the top 25% in the conservation scenario.

Table 6.5. Final Rank Scores for EOs in North and South Carolina. Dark green represents the top 10% of scores, and light green includes the top 25% of scores.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

South Carolina		North Carolina	
EO_Code	Final Score	EO_Code	Final Score
60	79	149	94
7	79	73	93
17	75	49	92
16	74	12	90
27	71	238	90
28	70	161	88
31	69	227	87
14	66	249	86
11	63	233	86
38	62	182	85
34	61	250	85
1	60	251	84
26	59	194	84
52	56	51	84
57	56	310	84
18	55	75	84
37	54	113	84
36	48	319	81
42	44	76	81

2	43
40	42
59	41
49	41
8	39
33	39
4	37
39	35
35	34
43	34
24	33
21	32
22	31
53	31
50	31
15	30
25	26
56	24
5	24
54	22
30	22
32	20
51	20
6	20
19	19
20	17
41	12
46	8
13	5
55	3
3	0
9	0
10	0
12	0
23	0
29	0
44	0
45	0
47	0
48	0

74	81
10	80
181	79
55	79
37	79
276	78
259	77
159	77
29	76
160	73
167	72
9	72
154	72
23	71
106	71
197	71
61	70
46	70
184	69
237	69
158	68
118	68
241	68
239	67
236	66
14	66
72	64
168	64
254	64
269	64
262	64
280	63
274	62
256	62
125	61
235	60
52	60
16	60
121	58
77	58
85	57

79	57
44	57
70	57
312	56
192	56
56	56
69	55
33	55
30	55
191	55
193	55
64	55
62	55
202	55
240	54
1	54
303	54
246	54
71	54
320	54
304	54
267	53
273	53
90	53
31	53
28	51
242	51
17	51
5	50
180	50
270	50
157	50
222	49
230	49
115	48
281	48
91	48
4	48
298	48
311	48
225	48

198	47
89	47
3	47
84	47
308	47
275	47
183	46
40	46
284	46
258	46
231	46
229	46
58	46
164	46
83	45
282	44
18	44
205	43
172	42
296	42
283	42
268	42
80	41
130	41
174	41
305	41
199	41
271	40
25	40
32	40
219	40
35	40
151	40
54	39
318	39
187	39
173	39
92	39
21	39
60	38
63	38

8	38
294	37
169	37
287	37
170	36
45	36
53	36
188	34
189	34
299	34
38	33
224	33
39	33
36	33
13	32
309	31
124	31
59	31
48	31
34	30
203	30
163	30
207	28
293	27
300	27
57	25
209	25
201	25
315	24
291	24
162	23
20	23
206	23
107	22
166	22
122	22
292	21
213	21
208	20
272	20
317	19

196	18
212	17
165	17
306	14
279	14
200	12
47	10
195	7
2	0
6	0
11	0
15	0
19	0
27	0
50	0
87	0
114	0
175	0
190	0
204	0
210	0
223	0
255	0
263	0
264	0
265	0
266	0
277	0
278	0
286	0
297	0
313	0
314	0
321	0

Below we describe how we integrated potential positive and negative influences across the scenarios. We can assume there is some tipping point at which an area becomes so urbanized it is unsuitable for dwarf-flowered heartleaf, but we don't know exactly what that tipping point is. Similarly, we can assume additional populations are likely to be found or rediscovered across the

range, but there is no clear way to predict the exact number or location of these populations. Although there is great uncertainty associated with how the species will be influenced by these factors, the three scenarios are intended to capture the range of this uncertainty. Note, changes in climate have potential to exacerbate the effects of urbanization, but these effects are not likely to occur within our projection window (e.g. 2040).

Status Quo Scenario

Under the status quo scenario, we assume a few populations will be identified as persisting throughout the range, and that there will be a range of impacts from urbanization that are related to the % increase in urban development and whether a population is protected or not. We assessed population resilience under the following assumptions:

- Two additional populations are identified as persisting based on Maxent model metrics, last known abundance category, and total predicted urbanization from SLEUTH modelling. Six additional EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist based on the same metrics.
- Potential impacts of urban development based on SLEUTH Model projections focused on current delineated populations:
    - Protected areas
        - Protected in perpetuity—no negative impacts from urbanization
        - Voluntary protection/non-perpetuity—population drops 1 resilience rank if % increase in urbanization exceeds >50% threshold
    - Non-protected—population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold

High Development Scenario

Under the high development scenario, we assume no additional populations will be identified as persisting throughout the range, and that impacts from urbanization that are relatively high, and are also affected by whether a population is protected or not. We assessed population resilience under the following assumptions:

- No additional populations are identified as persisting
- Potential impacts of urban development based on SLEUTH Model projections focused on current delineated populations:
    - Protected areas
        - Protected in perpetuity— population drops 1 resilience rank if % increase in urbanization exceeds >50% threshold
        - Voluntary protection/non-perpetuity— population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold
    - Non-protected—population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold; extirpation of populations if % increase in urbanization exceeds >90% threshold.

Targeted Conservation Scenario

Under the targeted conservation scenario, we assume it is likely several additional populations (i.e. more than status quo scenario) will be identified as persisting throughout the range. The range of impacts from urbanization are the same as the Status Quo scenario. We assessed population resilience under the following assumptions:

- Six populations are identified as persisting based on Maxent model metrics, last known abundance category, and total predicted urbanization from SLEUTH modelling. Six additional EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist based on the same metrics.
- Potential impacts of urban development based on SLEUTH Model projections focused on current delineated populations:
    - Protected areas
        - Protected in perpetuity—no impacts from urbanization
        - Voluntary protection/non-perpetuity—population drops 1 resilience rank if % increase in urbanization exceeds >50% threshold

- Non-protected—population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold

Future Resilience

Our focus on future resilience of dwarf-flowered heartleaf is on the potential impacts from urbanization. Table 6.6 shows a summary of currently delineated populations and the predicted urban development to occur within each of the populations. The table only includes those populations that already have some current amount of urban development, or are predicted to have some amount of development occur by the year 2040. Populations not included in this table are not predicted to be urbanized at all, so for the purposes of future analysis, will be assumed to retain the same resilience category as current. For those populations included in the table, we focus on those populations that are anticipated to increase in urbanization beyond a threshold value, depending on the scenario, but thresholds include >25% and >50% increases. Also taken into account is whether or not a population is on protected lands, and if so, whether the population is protected in perpetuity or not. Below is a summary of projected future resilience under each of the three scenarios.

Table 6.6. Results of the SLEUTH model. Populations consist of both stand-alone EOs and aggregates of multiple EOs following the definition of delineating demographic populations from Chapter 4. Included are only those populations that already have some current amount of urban development, or are predicted to have some amount of development occur by the year 2040. Red cells indicate populations that are predicted to increase >50% in urbanization. Orange cells indicate populations that are predicted to increase >25% in urbanization.

Population Number	Total Area (sq m)	Already classed Urban	80% chance	90% chance	95% chance	97.5% chance	100% chance	>80%
206	17346.37096	0.40%	0.00%	0.00%	0.00%	6.24%	93.41%	99.65%
306	7804.656249	0.00%	15.11%	49.91%	7.83%	0.00%	22.40%	95.24%
208	55360.86786	17.31%	0.00%	0.00%	0.00%	0.00%	82.69%	82.69%
279	1951.661571	0.00%	0.00%	0.00%	0.00%	0.00%	80.85%	80.85%
214	15043.2984	0.00%	0.00%	1.44%	10.97%	0.00%	55.72%	68.13%
248	25486.15611	28.80%	0.00%	3.22%	0.02%	0.02%	53.03%	56.30%
316	43177.79587	20.06%	0.00%	16.68%	7.08%	0.00%	20.67%	44.43%
247	49898.17159	5.87%	0.00%	6.37%	0.00%	0.00%	23.35%	29.73%
291	11666.76374	35.39%	12.28%	13.53%	2.43%	0.00%	0.23%	28.47%
287	7901.775408	0.00%	0.00%	11.50%	0.00%	0.00%	14.25%	25.75%
312	6535.273235	0.00%	25.28%	0.00%	0.00%	0.00%	0.00%	25.28%
32	31220.60253	60.74%	0.00%	20.39%	0.00%	0.00%	0.00%	20.39%
177	26954.54153	25.34%	12.19%	0.92%	0.10%	5.31%	0.13%	18.66%
292	15611.18205	0.00%	0.00%	0.00%	0.00%	0.00%	18.40%	18.40%
261	21644.22924	0.00%	0.00%	13.21%	3.35%	0.00%	0.00%	16.56%
295	23486.00987	18.20%	0.00%	3.41%	11.99%	0.25%	0.00%	15.65%
125	20742.3249	0.00%	1.02%	5.65%	0.00%	6.67%	0.00%	13.34%
59	8172.007769	0.00%	13.09%	0.00%	0.00%	0.00%	0.00%	13.09%
302	120342.0641	1.46%	2.55%	2.55%	0.77%	2.33%	3.98%	12.19%
178	376781.2214	28.59%	2.79%	2.40%	0.68%	0.59%	2.64%	9.11%
93	43754.11642	0.19%	0.00%	0.00%	0.00%	0.00%	7.82%	7.82%
77	6044.427562	0.00%	1.51%	6.14%	0.00%	0.00%	0.00%	7.64%
179	15145.19453	85.06%	1.14%	0.00%	5.12%	0.00%	0.49%	6.75%
44	15081.76951	61.17%	0.27%	0.00%	0.00%	0.00%	4.68%	4.95%
252	39595.93143	63.47%	0.00%	3.80%	0.00%	0.00%	0.00%	3.80%
100	423621.7376	9.01%	1.32%	1.10%	0.72%	0.14%	0.00%	3.27%
276	123688.7819	0.61%	0.36%	1.87%	0.01%	0.00%	0.00%	2.24%
216	66424.06073	0.00%	0.91%	0.00%	0.00%	0.00%	0.00%	0.91%
154	33924.92259	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%	0.37%
29	249998.8742	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.05%
1	30711.68144	0.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	36339.91976	11.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	24498.03483	24.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
31	42929.76479	100.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
96	95947.32128	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
130	1168.240433	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
176	39787.48373	0.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
195	7805.599588	99.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
317	584.7346337	99.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
318	5396.859208	99.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
320	125.5182447	98.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Status Quo Scenario

In the Status Quo scenario, there are predicted to be 75 populations of dwarf-flowered heartleaf on the landscape (Table 6.7). The predicted resilience of the extant populations are as follows: very high (27); high (6); moderate (23); low (17); and 2 additional populations identified as persisting, with an unknown resilience. Six EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist, but resilience is unchanged because each of the populations are already predicted to be of very high resilience. When comparing future population resilience to current condition a few populations drop in their resilience category. One current population of very high resilience is predicted to drop to high resilience; two moderate populations are predicted to drop to low resilience; and five populations (one currently moderate and four currently low) are predicted to be extirpated due to urban development. Of the seven additional populations predicted to persist under this scenario, four are in South Carolina, and three in North Carolina. We did not assess resilience for these additional populations, but it is worth mentioning that the last time these populations were detected, resilience was very high (2), high (1), and moderate (4).

Table 6.7. Predicted resilience categories for *Hexastylis naniflora* populations under the Status Quo scenario, and comparison to current condition.

Site Name	Current Resilience	Status Quo
DNR Peters Creek Heritage Preserve	very high	very high
Cowpens NBF	very high	very high
Mill Creek Forest and Seep	very high	very high
Island Creek Heath Bluff	very high	very high
NCDOT TIP: R-2824	very high	very high
Murrays Mill/Upper Balls Creek NA	very high	very high
Big Horse Creek Rare Plant Site	very high	very high
Broad River/Sandy Run NA	very high	very high
New Hope Springhead Swamp	very high	very high
Facebook Site	very high	very high
Davenport Road/Mountain View Rare Plant Site	very high	very high
Broad River: Floyds Creek	very high	very high
Catawba River: Hoyle Crk-Micol Crk	very high	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	very high	very high
Buffalo Creek: Tributaries N and S of SR 2047	very high	high

Site Name	Current Resilience	Status Quo
Buffalo Creek: Kings Mountain Res	very high	very high
Broad River: Brushy Creek	very high	very high
Peaked Top Rare Plant Site/Foothills Landfill	very high	very high
Jacob Fork West Corridor	very high	very high
Floyds Creek Tributray Rare Plant Site	very high	very high
New Bethel Rare Plant Site	very high	very high
Leepers Creek Heartleaf Site	very high	very high
Cliffside Steam Station	very high	very high
Rhyne Conservation Preserve	very high	very high
Glade Creek, Alex County	very high	very high
Richardson Creek trib above Toms Lake	very high	very high
Gunpowder Creek: South of Hudson	very high	very high
Taylor Blaylock Res	very high	very high
Little Gunpowder Creek Rare Plant Site 1	high	high
Little Gunpowder Creek Rare Plant Site 2	high	high
Buffalo Creek Rare Plant Site	high	high
Northern Catawba County	high	high
Rock Barn Solar Farm	high	high
NCDOT TIP R-2824	moderate	moderate
Third Creek Rare Plant Site	moderate	moderate
Knob Creek NA	moderate	moderate
Buffalo Creek: Northeast of SR 1903	moderate	moderate
West Shelby Mesic Slope	moderate	low
Cat Square Heartleaf Forest	moderate	low
Kross Keys NA	moderate	moderate
First Broad River: Crooked Run Creek	moderate	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	moderate	moderate
Catawba River: North Fork Mountain Creek	moderate	moderate
Catawba River: Lake James	moderate	moderate
Hogpen Branch Transplant Site	moderate	moderate
Jonas Road Rare Plant Site	moderate	extirpated
South Fork Catawba River, Henry Fork	moderate	moderate
No Business Creek, Boyd Tract	moderate	moderate
Broad River/Sandy Run NA	moderate	moderate
Buffalo Shoals Creek	moderate	moderate
Fox Knoll Farm	moderate	moderate
Forest City: Adj to Isothermal CC	moderate	moderate
Hickory Area	moderate	moderate
UT of Kings Mountain Res	moderate	moderate

Site Name	Current Resilience	Status Quo
Brushy Creek Headwaters	moderate	moderate
Smith Cliff/Henry Fork River	moderate	moderate
Simms Hill/Little River Uplands	moderate	moderate
Collinsville (Hughes) Creek Slopes	moderate	moderate
Burke County - Drowning Creek UT	moderate	moderate
Sandy Spring Church Springhead Swamp	low	low
First Broad River: Hickory Creek	low	low
Buffalo Creek: Ravine	low	extirpated
Buffalo Creek: Potts Creek	low	extirpated
Smith Cliff/Henry Fork River	low	low
Pott Creek	low	low
Northeast Lincolnton: UT Walker Branch	low	extirpated
Gunpowder Creek	low	low
Killian Crossroads	low	low
Beaverdam Crk at First Broad River	low	low
Lincoln County, SR-1314	low	low
Levan Family Farm	low	low
Fanjoy Road Site	low	extirpated
First Broad River: Beaverdam Creek Tribs	low	low
South Mountains Pleasant Grove Uplands	low	low
NCDOT TIP R-3603A	low	low
Hickory Creek - UT (Shelby High School)	low	low
Boulder Creek Subdivision	low	low
Gateway Elementary School	low	low
EO 194 (North Carolina)	n/a	present
EO 60 (South Carolina)	n/a	present

Commented [RNR2]: If you'd rather put names for these. 194 is First Broad River: unnamed tributary. 60 is Cherokee Creek/Bonner and Robin School Roads.

High Development Scenario

In the High Development scenario, there are predicted to be 72 populations of dwarf-flowered heartleaf on the landscape (Table 6.8). The predicted resilience of the extant populations are as follows: very high (27); high (4); moderate (25); and low (16). No new future populations are predicted to be discovered. When comparing future population resilience to current condition a few populations drop in their resilience category. One current population of very high resilience is predicted to drop to moderate resilience; one high resilience population is predicted to drop to moderate; two moderate populations are predicted to drop to low resilience; and six populations (one currently moderate and five currently low) are predicted to be extirpated due to urban development.

Table 6.8. Predicted resilience categories for *Hexastylis naniflora* populations under the High Development scenario, and comparison to current condition.

Site Name	Current Resilience	High Development
DNR Peters Creek Heritage Preserve	very high	very high
Cowpens NBF	very high	very high
Mill Creek Forest and Seep	very high	very high
Island Creek Heath Bluff	very high	very high
NCDOT TIP: R-2824	very high	very high
Murrays Mill/Upper Balls Creek NA	very high	very high
Big Horse Creek Rare Plant Site	very high	very high
Broad River/Sandy Run NA	very high	very high
New Hope Springhead Swamp	very high	very high
Facebook Site	very high	very high
Davenport Road/Mountain View Rare Plant Site	very high	very high
Broad River: Floyds Creek	very high	very high
Catawba River: Hoyle Crk-Micol Crk	very high	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	very high	very high
Buffalo Creek: Tributaries N and S of SR 2047	very high	moderate
Buffalo Creek: Kings Mountain Res	very high	very high
Broad River: Brushy Creek	very high	very high
Peaked Top Rare Plant Site/Foothills Landfill	very high	very high
Jacob Fork West Corridor	very high	very high
Floyds Creek Tributary Rare Plant Site	very high	very high
New Bethel Rare Plant Site	very high	very high
Leepers Creek Heartleaf Site	very high	very high
Cliffside Steam Station	very high	very high
Rhyne Conservation Preserve	very high	very high
Glade Creek, Alex County	very high	very high
Richardson Creek trib above Toms Lake	very high	very high
Gunpowder Creek: South of Hudson	very high	very high
Taylor Blaylock Res	very high	very high
Little Gunpowder Creek Rare Plant Site 1	high	high
Little Gunpowder Creek Rare Plant Site 2	high	high
Buffalo Creek Rare Plant Site	high	high
Northern Catawba County	high	moderate
Rock Barn Solar Farm	high	high
NCDOT TIP R-2824	moderate	moderate
Third Creek Rare Plant Site	moderate	moderate
Knob Creek NA	moderate	moderate
Buffalo Creek: Northeast of SR 1903	moderate	moderate

Site Name	Current Resilience	High Development
West Shelby Mesic Slope	moderate	low
Cat Square Heartleaf Forest	moderate	low
Kross Keys NA	moderate	moderate
First Broad River: Crooked Run Creek	moderate	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	moderate	moderate
Catawba River: North Fork Mountain Creek	moderate	moderate
Catawba River: Lake James	moderate	moderate
Hogpen Branch Transplant Site	moderate	moderate
Jonas Road Rare Plant Site	moderate	extirpated
South Fork Catawba River, Henry Fork	moderate	moderate
No Business Creek, Boyd Tract	moderate	moderate
Broad River/Sandy Run NA	moderate	moderate
Buffalo Shoals Creek	moderate	moderate
Fox Knoll Farm	moderate	moderate
Forest City: Adj to Isothermal CC	moderate	moderate
Hickory Area	moderate	moderate
UT of Kings Mountain Res	moderate	moderate
Brushy Creek Headwaters	moderate	moderate
Smith Cliff/Henry Fork River	moderate	moderate
Simms Hill/Little River Uplands	moderate	moderate
Collinsville (Hughes) Creek Slopes	moderate	moderate
Burke County - Drowning Creek UT	moderate	moderate
Sandy Spring Church Springhead Swamp	low	low
First Broad River: Hickory Creek	low	low
Buffalo Creek: Ravine	low	extirpated
Buffalo Creek: Potts Creek	low	extirpated
Smith Cliff/Henry Fork River	low	low
Pott Creek	low	low
Northeast Lincolnton: UT Walker Branch	low	extirpated
Gunpowder Creek	low	extirpated
Killian Crossroads	low	low
Beaverdam Crk at First Broad River	low	low
Lincoln County, SR-1314	low	low
Levan Family Farm	low	low
Fanjoy Road Site	low	extirpated
First Broad River: Beaverdam Creek Tribs	low	low
South Mountains Pleasant Grove Uplands	low	low
NCDOT TIP R-3603A	low	low
Hickory Creek - UT (Shelby High School)	low	low

Site Name	Current Resilience	High Development
Boulder Creek Subdivision	low	low
Gateway Elementary School	low	low

Targeted Conservation Scenario

In the Targeted Conservation scenario, there are predicted to be 79 populations of dwarf-flowered heartleaf on the landscape (Table 6.9). The predicted resilience of the extant populations are as follows: very high (27); high (6); moderate (23); low (17); and 6 additional populations discovered to persist, with an unknown resilience. Six EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist, but resilience is unchanged because each of the populations are already predicted to be of very high resilience. When comparing future population resilience to current condition a few populations drop in their resilience category. One current population of very high resilience is predicted to drop to high resilience; two moderate populations are predicted to drop to low resilience; and five populations (one currently moderate and four currently low) are predicted to be extirpated due to urban development. Of the sixteen additional populations predicted to persist under this scenario, ten are in South Carolina, and six in North Carolina. We did not assess resilience for these additional populations, but it is worth mentioning that the last time these populations were detected, resilience was very high (2), high (1), moderate (11), and low (2).

Table 6.9. Predicted resilience categories for *Hexastylis naniflora* populations under the Targeted Conservation scenario, and comparison to current condition.

Site Name	Current Resilience	Targeted Conservation
DNR Peters Creek Heritage Preserve	very high	very high
Cowpens NBF	very high	very high
Mill Creek Forest and Seep	very high	very high
Island Creek Heath Bluff	very high	very high
NCDOT TIP: R-2824	very high	very high
Murrays Mill/Upper Balls Creek NA	very high	very high
Big Horse Creek Rare Plant Site	very high	very high
Broad River/Sandy Run NA	very high	very high
New Hope Springhead Swamp	very high	very high
Facebook Site	very high	very high
Davenport Road/Mountain View Rare Plant Site	very high	very high

Site Name	Current Resilience	Targeted Conservation
Broad River: Floyds Creek	very high	very high
Catawba River: Hoyle Crk-Micol Crk	very high	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	very high	very high
Buffalo Creek: Tributaries N and S of SR 2047	very high	high
Buffalo Creek: Kings Mountain Res	very high	very high
Broad River: Brushy Creek	very high	very high
Peaked Top Rare Plant Site/Foothills Landfill	very high	very high
Jacob Fork West Corridor	very high	very high
Floyds Creek Tributray Rare Plant Site	very high	very high
New Bethel Rare Plant Site	very high	very high
Leepers Creek Heartleaf Site	very high	very high
Cliffside Steam Station	very high	very high
Rhyne Conservation Preserve	very high	very high
Glade Creek, Alex County	very high	very high
Richardson Creek trib above Toms Lake	very high	very high
Gunpowder Creek: South of Hudson	very high	very high
Taylor Blaylock Res	very high	very high
Little Gunpowder Creek Rare Plant Site 1	high	high
Little Gunpowder Creek Rare Plant Site 2	high	high
Buffalo Creek Rare Plant Site	high	high
Northern Catawba County	high	high
Rock Barn Solar Farm	high	high
NCDOT TIP R-2824	moderate	moderate
Third Creek Rare Plant Site	moderate	moderate
Knob Creek NA	moderate	moderate
Buffalo Creek: Northeast of SR 1903	moderate	moderate
West Shelby Mesic Slope	moderate	low
Cat Square Heartleaf Forest	moderate	low
Kross Keys NA	moderate	moderate
First Broad River: Crooked Run Creek	moderate	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	moderate	moderate
Catawba River: North Fork Mountain Creek	moderate	moderate
Catawba River: Lake James	moderate	moderate
Hogpen Branch Transplant Site	moderate	moderate
Jonas Road Rare Plant Site	moderate	extirpated
South Fork Catawba River, Henry Fork	moderate	moderate
No Business Creek, Boyd Tract	moderate	moderate
Broad River/Sandy Run NA	moderate	moderate
Buffalo Shoals Creek	moderate	moderate

Site Name	Current Resilience	Targeted Conservation
Fox Knoll Farm	moderate	moderate
Forest City: Adj to Isothermal CC	moderate	moderate
Hickory Area	moderate	moderate
UT of Kings Mountain Res	moderate	moderate
Brushy Creek Headwaters	moderate	moderate
Smith Cliff/Henry Fork River	moderate	moderate
Simms Hill/Little River Uplands	moderate	moderate
Collinsville (Hughes) Creek Slopes	moderate	moderate
Burke County - Drowning Creek UT	moderate	moderate
Sandy Spring Church Springhead Swamp	low	low
First Broad River: Hickory Creek	low	low
Buffalo Creek: Ravine	low	extirpated
Buffalo Creek: Potts Creek	low	extirpated
Smith Cliff/Henry Fork River	low	low
Pott Creek	low	low
Northeast Lincolnton: UT Walker Branch	low	extirpated
Gunpowder Creek	low	low
Killian Crossroads	low	low
Beaverdam Crk at First Broad River	low	low
Lincoln County, SR-1314	low	low
Levan Family Farm	low	low
Fanjoy Road Site	low	extirpated
First Broad River: Beaverdam Creek Tribs	low	low
South Mountains Pleasant Grove Uplands	low	low
NCDOT TIP R-3603A	low	low
Hickory Creek - UT (Shelby High School)	low	low
Boulder Creek Subdivision	low	low
Gateway Elementary School	low	low
EO 194 (North Carolina)	n/a	present
EO 72 (North Carolina)	n/a	present
EO 118 (North Carolina)	n/a	present
EO 60 (South Carolina)	n/a	present
EO 34 (South Carolina)	n/a	present
EO 1 (South Carolina)	n/a	present

Viability Summary

Urban development is predicted to have negative impacts on several of the current populations under all of our scenarios. However, this loss of resilience and extirpation of a few populations

Commented [RNR3]: See above

Commented [RNR4]: See above

Commented [RNR5]: 1 – Cherokee Creek/SC11
34 – Arrowood Branch
118 – Big Island Carolina Hemlock Bluff
72 – First Broad Hop-Hornbeam NA

is offset by the fact that several additional populations were found to persist in the Status Quo and Targeted Conservation scenarios. In the High Development Scenario, there is a predicted loss of 6 populations, with loss of resilience in several additional populations. Regardless of the scenario, the majority of the populations expected to persist on the landscape in 2040 are of at least moderate resilience.

Given the relatively high number of populations across each scenario, redundancy remains similar to current conditions. That is to say, there appears to be adequate redundancy within the range of dwarf-flowered heartleaf to withstand the impacts of localized press catastrophic disturbances, however the species range is relatively small, making it potentially vulnerable to long-term catastrophic events, such as climate change.

Given that dwarf-flowered heartleaf has a very limited range, and after consulting with experts, we decided delineating representative units was not appropriate for this species. It is worth noting that in two of our scenarios (Status Quo and Targeted Conservation), additional populations are found to persist in South Carolina, an area where we have relatively few current populations. As discussed below, we believe there are opportunities to find additional populations based on the amount of predicted unoccupied potential habitat. Although we did not delineate representative units, we believe our scenarios do not predict declines in species representation.

Table 6.10. Viability summary for *Hexastylis naniflora* under 3 future scenarios (projected to year 2040) and compared to Current Condition.

	CURRENT	STATUS QUO	HIGH DEVELOPMENT	TARGETED CONSERVATION
VERY HIGH	28	27	27	27
HIGH	5	6	4	6
MODERATE	26	23	25	23
LOW	19	17	16	17
EXTIRPATED	n/a	5	6	5
PERSISTING	n/a	2	0	6
TOTAL	**78**	**75**	**72**	**79**

Deleted: ADDITIONAL

Opportunities for Additional Conservation

Although our scenarios focus on areas where dwarf-flowered heartleaf have been found in the past, the Maxent model identifies a number of areas as high quality potential habitat for the species that falls outside the immediately known occurrence areas. A few of these areas are detailed below (Figure 6.2).

1. West of the city of Lenoir, south of Highway 90/Adako Rd., north of Highway 64 within Caldwell County. This area identifies a large block of potential habitat. This area falls just outside the administrative boundary of the Pisgah National Forest. The bluffs and tributaries along the Johns River are identified as the best habitat, but there is also ample habitat identified along the forested areas of Celia, Husband, Abingdon and Greasy Creeks. The only known occurrence within this area is associated with Abingdon Creek and is under a conservation easement.
2. Henry Fork River bluffs and tributaries east of Highway 18 within Burke County. A historic element occurrence is present by the Burke County line, but the entire area is identified as good quality potential habitat for the species where forested habitats remain.
3. South West corner of Catawba County west of Highway 321. Several disjointed patches of high quality potential habitat are identified in this region associated with the river and creek slopes. Rock Creek, Jacob Fork River, Pott Creek, and their associated tributaries all contain blocks of potential habitat. A number of element occurrences are identified within this area, but additional habitat is identified both upstream and downstream of the known occurrences.

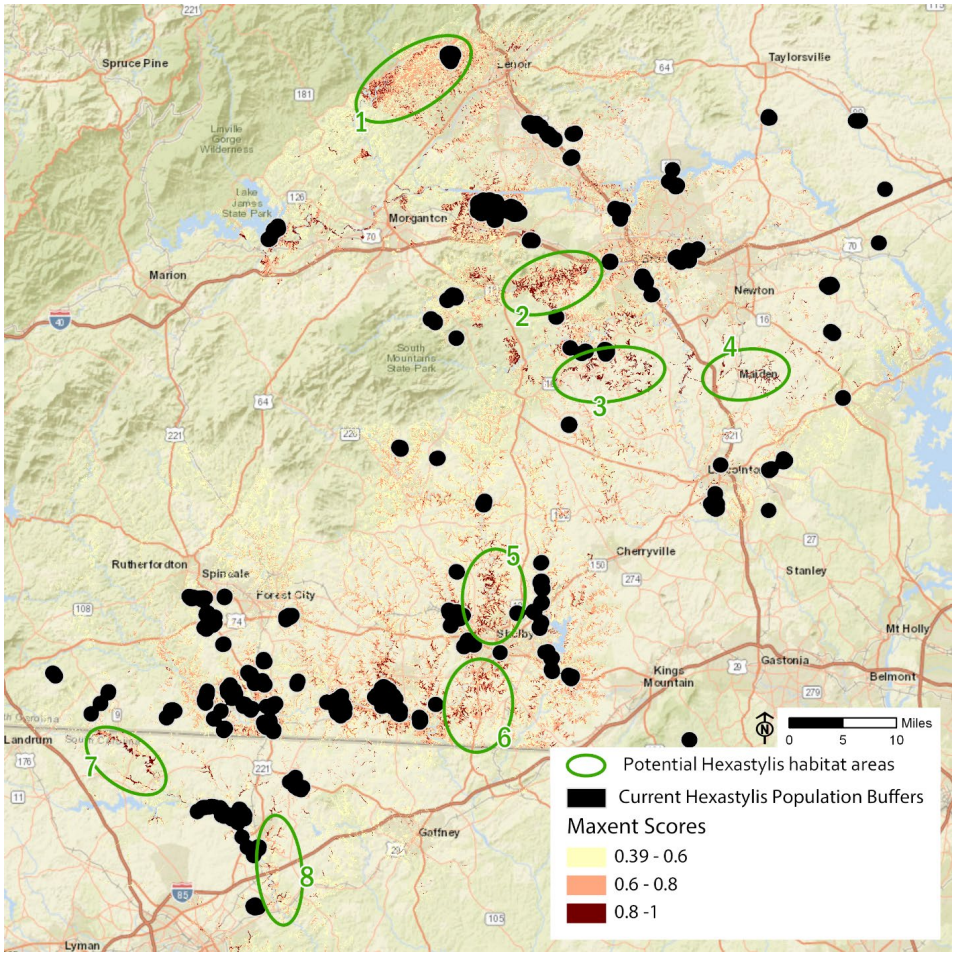
4. Clark, Pinch Gut, Maiden, and Allen Creeks, north of the town of Maiden. The slopes along these creeks all contain quality potential habitat. Known element occurrences are in the general area, but none are situated within the creeks listed.
5. First Broad River North of Highway 74, Rutherford County. Two older element occurrences are located within this area, however, the forested bluffs along the First Broad River and associated tributaries are identified as good quality potential habitat in many additional upstream and downstream areas in this system.

6. Hickory Creek, Sulphur Springs Branch (Little Hickory), Shoal Creek, and tributaries draining into First Broad River South of the Town of Shelby, north of the South Carolina border. The town of Shelby has likely disconnected this site from area 5 listed above. Here, slopes along the creeks and tributaries draining into the First Broad River are identified as potential habitat more so than the slopes along the First Broad River themselves. There in only a single element occurrence known upstream along Hickory Creek.

7. North Pacolet River and Obed Creek, north of where they join. The majority of potential habitat falls along the slopes of the North Pacolet River. Two older element occurrences (1991 last observation) are found in the tributaries draining into the North Pacolet River, and many occurrences are found further upstream. The habitat model suggests that additional undiscovered habitat areas are present.

8. Pacolet River and Island Creek, north of Peters Creek, downstream of the Pacolet River dam. This area displays limited amounts of good quality potential habitat. Recent element occurrences are present in the upper headwaters of Peters and Zekial Creeks (Zekial Creek drains into Peters Creek) and in areas north of the Pacolet River dam, but none are known along the areas identified in this immediate area.

Figure 6.2. Areas identified as high quality potential habitat by Maxent model for *Hexastylis naniflora* that fall outside the immediately known occurrence areas.



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Good afternoon Byron!

The draft SSA for dwarf-flowered heartleaf is ready for peer review. Attached you will find the document Rebekah put together suggesting folks for the peer review. We need the reviews turned around by June 4th, so that we can incorporate before the Recommendation meeting. Also, will you please cc me and Rebekah when it gets sent out for the peer review please? Any way this can be sent out today?

Attachments are: the SSA itself, a cover page and table of contents, and appendices....and the list of reviewers to reach out to.

Let me know if you have any questions....thanks a bunch!

Mike

--
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DRAFT Species Status Assessment Report

for

Dwarf-flowered Heartleaf (*Hexastylis naniflora*)

Version 1.0



xx-xx-201x (date)

U.S. Fish and Wildlife Service

Region 4

Atlanta, GA

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

The Species Status Assessment (SSA) reports the results of the comprehensive status review for the dwarf-flowered heartleaf (*Hexastylis naniflora*). For the purpose of this assessment, we generally define viability as the ability of the dwarf-flowered heartleaf to sustain resilient populations in the natural ecosystems within its range over time. Using the SSA framework, we consider what the species needs to maintain viability by characterizing the status of the species in terms of its resiliency, redundancy, and representation (USFWS 2016, entire; Wolf et al. 2015, entire). This SSA provides a thorough assessment of biology and natural history and assesses demographic risks, stressors, and limiting factors in the context of determining the viability for the species. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time.

The dwarf-flowered heartleaf is a low growing herbaceous plant in the birthwort family (Aristolochiaceae) with a range currently restricted to 13 counties within the Upper Piedmont of South Carolina and North Carolina. The species appears to have a restricted range due to its habitat requirements, including soil type, moisture availability, and various other landform characteristics (Wagner 2013).

For the dwarf-flowered heartleaf to maintain viability, its populations or some portion thereof must be resilient. Stochastic factors that have the potential to affect the species include habitat loss due to the conversion of land to residential, commercial, and industrial use. Other factors that influence the resiliency of dwarf-flowered heartleaf populations include habitat loss from land conversion to agricultural use, timber harvest, hydrological alterations from the damming of

ponds, impacts from grazing cattle, ORV damage, trampling from foot traffic, invasive species, highway or road improvements, and erosion or siltation (NCNHP 2016, Robinson and Padgett 2016). Climate change may exacerbate these risk factors through changes in temperature and precipitation.

For the purposes of this SSA, we use population size as the main driver of population resilience. The unit of measurement for population size in this species is a "clump" (rosette). We used Element Occurrence data from both North Carolina Natural Heritage Program and South Carolina Heritage Trust Program as a basis for delineating populations. Delineations were based off of NatureServe criteria such as EO separation distance and intervening landscape matrix. EO data included a wide range of years since the species was last observed at a given location (1964-2017), however, we only used EOs that were observed since 2005.

To determine overall resilience for populations, we used last known abundance estimates to bin population size classes into corresponding resilience categories. EO rank specifications suggest good-excellent viability for populations consisting of at least 500 individuals, given there is sufficient high quality habitat; fair viability for populations consisting of 100-500 individuals, depending on habitat conditions; poor viability for populations consisting of less than 100 individuals. Recent reports (Robinson 2016; Robinson and Padgett 2016) focus monitoring studies on populations with greater than 1,000 individuals, populations that are assumed to be very viable. We synthesized all of the above population size information and created four resilience categories as follows:

- Very high—populations with >1,000 individuals; very high probability of persistence for 20-30 years at or above the current population size.

- High—populations with 500-1,000 individuals; moderate-high probability of persistence for 20-30 years at or above the current population size.

- Moderate—populations with 100-500 individuals; low probability of persistence for 20-30 years at or above the current population size.

- Low—populations with <100 individuals; low probability of persistence for 20-30 years at or above the current population size, and moderate-high probability of extirpation.

There are currently 78 populations of dwarf-flowered heartleaf that have been observed since 2005. The resilience of these populations is as follows: 28 (very high); 5 (high); 26 (moderate); 19 (low).

Our analysis of future conditions focused on the potential negative impacts of urbanization, and potential positive effects of location or rediscovery of additional populations. Because the actual impacts of urbanization and probability of locating additional populations are unknown, we use three scenarios, projected out to the year 2040, to capture the uncertainty related to the potential impacts to each population's resiliency: Status Quo, Targeted Conservation, and High Development. A projection out to 2040 was based on the life span of the species, expert input, development as the key risk factor brought forward, uncertainty about future conditions, and lack of knowledge about where additional populations may persist on the landscape.

We used the Slope, Land cover, Exclusion, Urbanization, Transportation, and Hillshade (SLEUTH) models to determine areas predicted to be urbanized by 2040. We used a habitat model and corresponding SMART methodology to assess the likelihood that the species would be found to persist on various sites.

Urban development is predicted to have negative impacts on several of the current populations under all of our scenarios. However, this loss of resilience and extirpation of a few populations is offset by the fact that several additional populations were found to persist in the Status Quo and Targeted Conservation scenarios. In the High Development Scenario, there is a predicted loss of 6 populations, with loss of resilience in several additional populations. Regardless of the scenario, the majority of the populations expected to persist on the landscape in 2040 are of at least moderate resilience.

Given the species' current condition and the impacts that the species is expected to experience under the future scenarios, some reductions in resilience are anticipated, but redundancy and representation are unaffected under all scenarios. The results of the SSA indicate the species has a low susceptibility to threats and a high degree of stability.

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Appendix 1

Populations of *Hexastylis naniflora* estimated to contain over 1,000 rosettes in 2010, with updated information in 2016[1], and protection measures for these populations.

Populations known to be afforded some protection are indicated in **bold**.[2]

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
1	NC	Burke	029	A	Island Creek Heath Bluff (Lovelady Sites)	50,000+ (2016)	0	Not protected.
2	NC	Burke	178.159-178.161 178.254-178.256 178.280-178.282	A	Catawba River: Love Lady (Hoyle and Micol Creek)	~6,738 (2008-2011)	Awaiting data from NCDOT.	Possible NCDOT protected R-O-W, protection unconfirmed. In early 2016, the Town of Valdese applied to CWMTF to acquire part of this population.
3	**NC**	**Caldwell**	**227**	**A**	**Peaked Top Rare Plant Site (Foothills Landfill)**	**16,463 (2014)**	**16,463 (2014)**	**Conservation Easement (Foothills Conservancy of NC).**
4	**NC**	**Caldwell**	**044**	**AB**	**Little Gunpowder Creek Rare Plant Site 1**	**2,707 (2015)**	**2,424 (2015)**	**DOT mitigation site.**
5	NC	Catawba	158	D	South Fork Catawba River: Jacob Fork, Camp Creek	123 (2016)	27 (2015)	Some plants occur within an undetermined acreage within NCDOT R-O-W (Bassette 2016). Protection unconfirmed.
6	**NC**	**Catawba**	**243.012,** 243.242 243.269, **243.270**	**A**	**Catawba Wildlife Club**	**1,000-1300 (1995-2007)**	**>1,000 (1995-2007)**	**Catawba County Wildlife Club Registered Heritage Area (EO 12) The Nature Conservancy Conservation Easement (EO 270).**
7	NC	Catawba	031	C?	US 321, southeast Hickory	1,202 (2010)	161 (2010)	161 plants within NCDOT R-O-W (Bassette 2016).
8	**NC**	**Catawba**	**96.184,** 96.038 96.039	**A**	**Murrays Mill/Upper Balls Creek**	**~9,150 (2005)**	**11,860 (2013)**	**Fee title by NCDOT (~34 acres).**
9	**NC**	**Cleveland**	100.014, **100.049, 100.050, 100.051, 100.073, 100.074 100.149, 100.233**	**A**	**Broad River/Sandy Run Natural Areas (aka "Broad River Tract")**	**~33,500 (2001-2015)**	**32,702 (2015)**	**Fee title by Broad River Greenway (1,000 acres).**

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
			100.236, 100.237 **100.238, 100.239 100.240, 100.241,** 100.246					
10	NC	Cleveland	208	A?	Buffalo Creek: Potts Creek	3,572 (2007)		Awaiting verification that plants are protected in NCDOT R-O-W. Protection unconfirmed.
11	NC	Cleveland	211.072, 211.194		First Broad River: Hop-Hornbeam Natural Area	1,965 (2000)		Awaiting verification that plants are protected in NCDOT R-O-W. Protection unconfirmed.
12	NC	Cleveland	214.201, **214.202, 214.203,** 214.204, **214.205, 214.209,** 214.212, **214.213,**	A	Buffalo Creek: tributaries north and south of SR2047	6,447 (200-2007)		Awaiting verification that plants are protected in NCDOT in R-O-W, bold in EO column. Protection unconfirmed (EO 202, 203, 205, 209, 213).
13	NC	Cleveland	216.028, 216.196, 216.197, 216.198, **216.199, 216.200**	A	Buffalo Creek: Kings Mountain Reservoir	3,310 (200-2016)	~500? (2000-2007) (awaiting updates)	Awaiting verification that plants are protected in NCDOT in R-O-W, bold in EO column. Protection unconfirmed (EO 199, 200).
14	NC	Cleveland	157	AB	First Broad River: Crooked Run Creek	330 (2010)		None of the population is protected within NCDOT R-O-W, determined too far away from roadside, DOT stopped monitoring in 2010 (Bassette 2016).
15	**NC**	**Cleveland/ Rutherford**	**276**	**A**	**Cliffside Steam Station**	**39,545 (2016)**	**~39,545 (2016)**	**Voluntary agreement with Duke Energy; protected acreage unknown.**
16	NC	Lincoln	261.252, 261.259, 261.263	B	Lincoln County Airport and Leepers Creek	7,032 (2005-2006)		Not protected.
17	NC	Polk	023	A	Mills Creek Forest and Seep	1,459 (2016)		Not protected.

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
18	**NC**	**Polk**	**125**	**A**	**Broad River: New Hope Springhead Swamp**	**12,235 (2016)**	**1,000-3,000 estimated (2016)**	**New Hope Springhead Swamp Registered Heritage Area (voluntary conservation agreement).**
19	**NC**	**Rutherford**	**154**	**C**	**Second Broad River (Forest City Industrial Complex)**	**2,576 (2016)**	**2478 (2008)**	**Deed restrictions (12 acres). Significant threats from industrial development, invasive exotics, erosion, sedimentation in a fragmented landscape.**
20	**NC**	**Rutherford**	99.009, 99.010, 99.037, 99.052, 99.053, 99.055, 99.061, 99.063, 99.075, **99.076,** 99.079, 99.090, 99.121, **99.172,** 99.181, 99.182, 99.249-.251, 99.267, 99.268	**A**	**Broad River: Hensons Creek Ravine, Brice Rare Plant Site, Sandy Mush Outcrop**	**106,940 (2016)**	**~200-250 (2007-2012)**	**Parris Heartleaf Registered Heritage Area (voluntary conservation agreement on subEO 076 and 172).**
21	NC	Rutherford	176.167-176.170	A	Broad River: Cleghorn Creek Tributary/US221	6,750 (2016)		Not protected.
22	NC	Rutherford	177.016, 177.107, 177.122, 177.063, 177.164, 177.165, 177.166	A	Broad River: Floyds Creek, Long Branch	12,687 (2008-2016)		Not protected.
23	**NC**	**Rutherford**	247.013, 247.056, 247.080, **247.106,** 247.114, 247.115, 247.173, 247.174, **247.286**	**A**	**Broad River: Floyds Creek (aka New Bethel Rare Plant Site)**	**~5,480 (2003-2015)**	**4,873 (2015)**	**Tate Conservation Easement (8 acres) (SubEOs 106 and 286).**
24	**SC**	**Cherokee**	**016, 017, 018**	**BC**	**Cowpens Battlefield**	**2,823 (2016)**	**2,823? (2016)**	**National Park Service, National Battlefield.**

USFWS population number	State	County	NHP EO numbers (2016)[3]	NHP EO rank (2016)[4,5]	Site	Latest estimate of population size (year)	Estimate of plants on-site protection (year)	Protection comments
25	SC	Greenville /Spartanburg	002, 004, 024, 032, 033, 036, 038, 039, 040, 041, 042, 049, 050, 054	Various AB-BD	South Pacolet River and tributaries	5,205 (1991-1998)		Not protected.
26	**SC**	**Spartanburg**	**011, 014, 026--028, 047, 048, 057**	**Various AB-BD**	**Peters Creek Heritage Preserve**	**3,306 (2016)**	**3,306 (2016)**	**State Heritage Preserve (194 acres).**
27	**SC**	**Spartanburg**	**007, 029**	**BD, H?**	**Blalock Reservoir**	**3,505 (2016)**	**3,505? (2016)**	**Restrictive covenants (protected acreage unknown); significant threats to remaining population.**
28[6]	**NC**	**Lincoln**	302.046, **302.262**	**A**	**Rhyne Preserve**	**19,880 (2016)**	**19,873 (2016)**	**Rhyne Preserve (fee title by Catawba Lands Conservancy).**

[1]This table was replicated in the same format and populations as Table B.2 from the most recent USFWS five-year Review of *Hexastylis naniflora* (USFWS 2010) for comparison of changes since the time of the five-year review. Populations that are not believed to contain over 1,000 rosettes but were included in the original Table B.2 are included here, but the "NHP EO rank" and in the "Latest estimate of population size" reflects the smaller size.

[2] In the case of partially protected populations, the column "NHP EO numbers" indicates the specific portions of the population afforded protection in bold font.

[3]NHP EO numbers use the following format: Principal EO.SubEO. Only one number is listed if it is a stand-alone principal EO.

[4]NHP EO rank specifications are defined in Appendix B2. In cases involving principal/sub EOs, only the rank for the principal EO is given.

[5] EO ranks with two letters indicate a degree of uncertainty within the range provided (e.g. a rank of "AB" indicates possibly excellent to good viability).

[6]Population that is currently estimated to have over 1,000 rosettes that was not known to be large populations in 2010 have been added to this table.

Appendix 2

NC Natural Heritage Program (NCNHP) Element Occurrence Rank Specifications for *Hexastylis naniflora*

"A" Rank Specifications (excellent viability)
An A-ranked population of *Hexastylis naniflora* should have more than 500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest.

“B” Rank Specifications (good viability)
A B-ranked population of *Hexastylis naniflora* should have 200-500 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - more than 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"C" Rank Specifications (fair viability)
A C-ranked population of *Hexastylis naniflora* should have 100-200 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - 200- 500 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

"D" Rank Specifications (poor viability)
A D-ranked population of *Hexastylis naniflora* should have fewer than 100 clumps (rosettes) occurring in greater than one acre of high quality forest such as Dry-Mesic Oak Hickory Forest or Mesic Mixed Hardwood Forest - OR - less than 200 clumps occurring in less than one acre of high quality forest or on land impacted by human disturbance such as logging, grazing, mowing, etc.

“E” Rank Specifications (extant)
An E-ranked population of *Hexastylis naniflora* is an occurrence that has recently been verified as still existing, but sufficient information for the factors used to estimate viability has not yet been obtained.

“H” Rank Specification (historical)
An H-ranked population of *Hexastylis naniflora* lacks recent field information verifying the continued existence of the occurrence. In the absence of known disturbance and with the habitat still extant, H is generally recommended for occurrences that have not been reconfirmed for approximately 30 or more years.

“F” Rank Specification (failed to find)
An F-ranked population of *Hexastylis naniflora* has not been found despite a search by an experienced observer at a time and under conditions appropriate for the Element at a location where it was previously reported, but the occurrence still might be confirmed to exist at that location with additional field survey efforts. For occurrences with vague locational information, the search must include areas of appropriate habitat within the range of locational uncertainty.

“X” Rank Specification (failed to find)
An X-ranked population of *Hexastylis naniflora* is considered destroyed based on adequate surveys by one or more experienced observers at times and under conditions appropriate for the species at the occurrence location, or other persuasive evidence indicates that the species no longer exists there or that the habitat has been destroyed to such an extent that it can no longer support the species.

“U” Rank Specification (failed to find)
A U-ranked population of *Hexastylis naniflora* cannot be assigned a rank due to lack of sufficient information on the occurrence or the species identification has not been confirmed.

Rank Specifications Justification
The unit of measurement for population size in this species is "clump" (rosette). EO size (as quantified by number of clumps or rosettes) is the primary rank factor. Condition of habitat (vegetation community and structure) and Landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. The species thrives most in undisturbed habitat. However, disturbed lands, that have been logged, grazed, mown, or converted to pasture, orchards, or tree plantations have been found to support remnant patches of *Hexastylis naniflora*. The extent to which this species can withstand disturbance is unknown. Populations in disturbed habitat are considered at risk, with relatively poor viability (C or D). Care should be taken when estimating population size, as population estimates have been found to vary widely from the number counted in population censuses. Specifications are based on largest known populations and expert opinion (including James Padgett, Carolyn Wells, Misty Buchanan (formerly Franklin), and Brenda Wichmann).

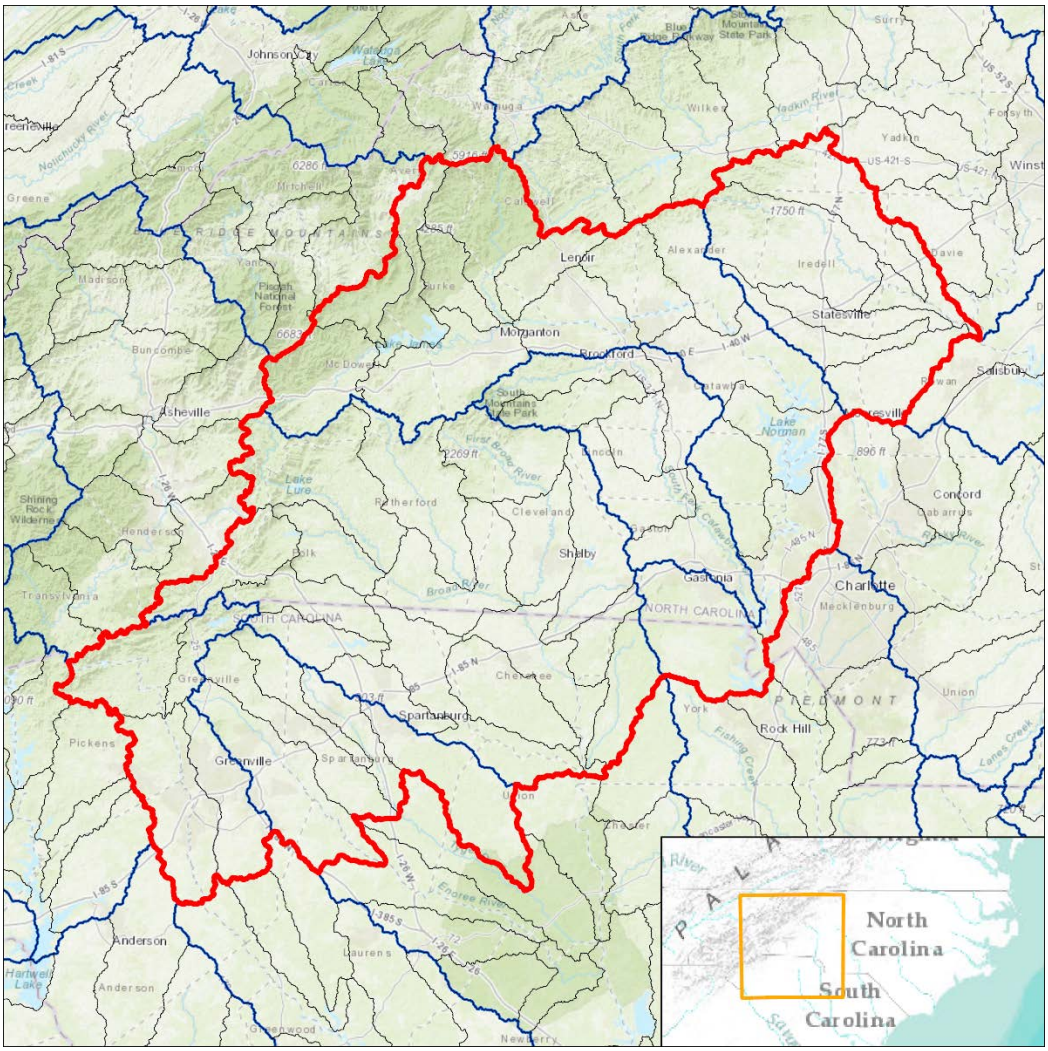
Appendix 3

Maxent Model Methodology

Study Extent, Coordinate System, and Cell Size

Fifty three 10-digit hydrologic units (HUC) comprise the analysis extent (Figure 1). In North Carolina it includes all 10-digit HUC that fall within the boundaries of 8-digit HUC with known occurrence of Hexastylis. In South Carolina we also included all 10-digit HUC that fell within the boundaries of 8-digit HUC with known occurrence of Hexastylis, but excluded the southern portions of the HUC-8 areas due to the boundaries being exceedingly large and far away from any known occurrences.

Figure 1. Analysis extent. Red line indicates Maxent analysis extent, blue lines are 8-digit HUC boundaries, black lines are 10-digit HUC boundaries. The orange line in the inset map indicates where the analysis extent is situated in North and South Carolina



Coordinate System: USA Contiguous Albers Equal Area Conic USGS version

Cell Size: 30 x 30 meters derived from the USGS National GAP Landcover

Source Element Occurrence Data

Hexastylis naniflora element occurrence data was obtained from the North and South Carolina Natural Heritage Programs. These data were in polygon format and digitized at scale that accurately identified the boundaries of the individual population areas. Current populations of Hexastylis naniflora were identified by reviewing the last observed data in the database and excluding all populations that have not been observed in the last 10 years (2007). To represent these current population areas in Maxent, a raster cell center was retained for every 30 x 30 meter pixel that was situated within the current element occurrence data polygons.

Source Datasets Used:

USGS National GAP Landcover - The GAP National Terrestrial Ecosystems – Ver 3.0 is a 2011 update of the National Gap Analysis Program Land Cover Data – Version 2.2 for the conterminous U.S. The GAP National Terrestrial Ecosystems – Version 3.0 represents a highly thematically detailed land cover map of the U.S at a 30 x 30 meter pixel resolution. The map legend includes types described by NatureServe's Ecological Systems Classification (Comer et al. 2002) as well as land use classes described in the National Land Cover Dataset 2011 (Homer et al. 2015). These data cover the entire continental U.S. and are a continuous data layer. The land cover map identifies 49 different land cover types within the range of Hexastylis Naniflora.

LandFire - Landscape Fire and Resource Management Planning Tools, is a shared program between the wildland fire management programs of the U.S. Department of Agriculture Forest Service and U.S. Department of the Interior, providing landscape scale geo-spatial products to support cross-boundary planning, management, and operations.

SSURGO Soils - The SSURGO database contains information about soil as collected by the National Cooperative Soil Survey over the course of a century. The information was gathered by walking over the land and observing the soil. Many soil samples were analyzed in laboratories. The maps outline areas called map units. The map units describe soils and other components that have unique properties, interpretations, and productivity. The information was collected at scales ranging from 1:12,000 to 1:63,360.

National Elevation Dataset - The NED is a seamless dataset with the best available raster elevation data of the conterminous United States, Alaska, Hawaii, and territorial islands. The NED is derived from diverse source data that are processed to a common coordinate system and unit of vertical measure. NED data are available nationally (except for Alaska) at resolutions of 1 arc-second (about 30 meters) and 1/3 arc-second (about 10 meters), and in limited areas at 1/9 arc-second (about 3 meters). The 1/3 arc-second database was used for HENA modelling purposes.

PRISM Climate Data - The PRISM Climate Group gathers climate observations from a wide range of monitoring networks, applies sophisticated quality control measures, and develops spatial climate datasets to reveal short- and long-term climate patterns. The resulting datasets incorporate a variety of modeling techniques and are available at multiple spatial/temporal resolutions, covering the period from 1895 to the present.

Model Variables Created:

Landcover – Landcover represented by the default landcover classification (Table 1).

Landcover Hexastylis Grouping – Landcover represented by a grouping of landcover types. For the purposes of discussing Hexastylis naniflora habitat, many of the default landcover classifications are similar and could be grouped together. The definition of each landcover classification was reviewed and categorized using a much broader habitat definition (Table 1).

Table 1. Landcover classification

Default Landcover Classification	Hexastylis Grouping
Southern Piedmont Glade and Barrens	Barren
Southern Ridge and Valley / Cumberland Dry Calcareous Forest	Barren
Undifferentiated Barren Land	Barren
Cultivated Cropland	Disturbed
Deciduous Plantations	Disturbed
Developed, High Intensity	Disturbed
Developed, Low Intensity	Disturbed
Developed, Medium Intensity	Disturbed
Developed, Open Space	Disturbed
Disturbed/Successional - Grass/Forb Regeneration	Disturbed
Disturbed/Successional - Shrub Regeneration	Disturbed
Evergreen Plantation or Managed Pine	Disturbed
Harvested Forest - Grass/Forb Regeneration	Disturbed
Harvested Forest-Shrub Regeneration	Disturbed
Introduced Upland Vegetation - Annual Grassland	Disturbed
Introduced Upland Vegetation - Shrub	Disturbed
Introduced Upland Vegetation - Treed	Disturbed
Pasture/Hay	Disturbed
Quarries, Mines, Gravel Pits and Oil Wells	Disturbed
Ruderal forest	Disturbed
Southern Appalachian Low Mountain Pine Forest	Evergreen
Southern Appalachian Montane Pine Forest and Woodland	Evergreen
Southern and Central Appalachian Cove Forest	Hardwood
Southern and Central Appalachian Oak Forest	Hardwood
Southern and Central Appalachian Oak Forest - Xeric	Hardwood
Southern Piedmont Mesic Forest	Hardwood

Central and Southern Appalachian Montane Oak Forest	High Elevation
Central and Southern Appalachian Northern Hardwood Forest	High Elevation
Central and Southern Appalachian Spruce-Fir Forest	High Elevation
Southern Appalachian Grass and Shrub Bald	High Elevation
Southern Appalachian Grass and Shrub Bald - Shrub Modifier	High Elevation
Appalachian Hemlock-Hardwood Forest	Mixed
Southern Piedmont Dry Oak-(Pine) Forest - Hardwood Modifier	Mixed
Southern Piedmont Dry Oak-(Pine) Forest - Loblolly Pine Modifier	Mixed
Southern Piedmont Dry Oak-(Pine) Forest - Mixed Modifier	Mixed
Southern Ridge and Valley Dry Calcareous Forest	Mixed
Southern Ridge and Valley Dry Calcareous Forest - Pine modifier	Mixed
Open Water (Fresh)	Open Water/Wetland
Southern and Central Appalachian Bog and Fen	Open Water/Wetland
Southern Piedmont/Ridge and Valley Upland Depression Swamp	Open Water/Wetland
Southern Appalachian Granitic Dome	Outcrop
Southern Appalachian Montane Cliff	Outcrop
Southern Appalachian Rocky Summit	Outcrop
Southern Piedmont Cliff	Outcrop
Southern Piedmont Granite Flatrock	Outcrop
South-Central Interior Large Floodplain - Forest Modifier	Riparian
South-Central Interior Small Stream and Riparian	Riparian
Southern Piedmont Large Floodplain Forest - Forest Modifier	Riparian
Southern Piedmont Small Floodplain and Riparian Forest	Riparian

Landcover Diversity – Identifies the number of landcover classes (default classification) within a 10-cell radius (300 meters) of an individual pixel.

Landcover Majority – Identifies the dominant landcover class (default classification) within a 10-cell radius (300 meters) of an individual pixel.

Landfire Canopy Height – Represents the vertically projected percent cover of the live vegetation canopy.

Landfire Canopy Cover – Represents the average height of the dominant vegetation across the landscape.

SSURGO mukey – SSURGO soils dataset represented by the Map Unit Key (mukey)

SSURGO Drainage Class – SSURGO soils dataset represented by wettest drainage class. Drainage class refers to the frequency and duration of wet periods in conditions similar to those under which the soil formed.

SSURGO Hydrologic Group – SSURGO soils dataset represented by hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

Elevation – National elevation dataset elevation values. This 10-meter dataset was reclassified to 30-meters.

Aspect 9-class – Using the national elevation dataset, the aspect was derived and categorized into the following classes: Flat, North, Northeast, East, Southeast, South, Southwest, West, and Northwest.

Aspect 5-class – Using the national elevation dataset, the aspect was derived and categorized into the following classes: Flat, North, East, South, and West.

Slope – The national elevation dataset represented by degree of slope.

Geomorphons – A pattern recognition analysis that converts a digital elevation dataset into 10 common landform elements: flat, peak, ridge, shoulder, spur, slope, pit, valley, footslope, and hollow. The national elevation dataset was used as the source elevation for the analysis.

Solar Radiation – An analysis of the amount of solar radiation (radiant energy) reaching the earth's surface using the national elevation dataset as the elevation model. The output solar model is reported in watt hours per square meter (WH/m^2)

Average Annual Precipitation – Climate dataset of average annual precipitation according to a model using point precipitation and elevation data for the 30-year period of 1971-2000.

Maximum Average Annual Temperature – Climate dataset of average annual maximum temperature according to a model using point temperature data for the 30-year period of 1981-2010.

Minimum Average Annual Temperature – Climate dataset of average annual minimum temperature according to a model using point temperature data for the 30-year period of 1981-2010.

Maxent Model Development

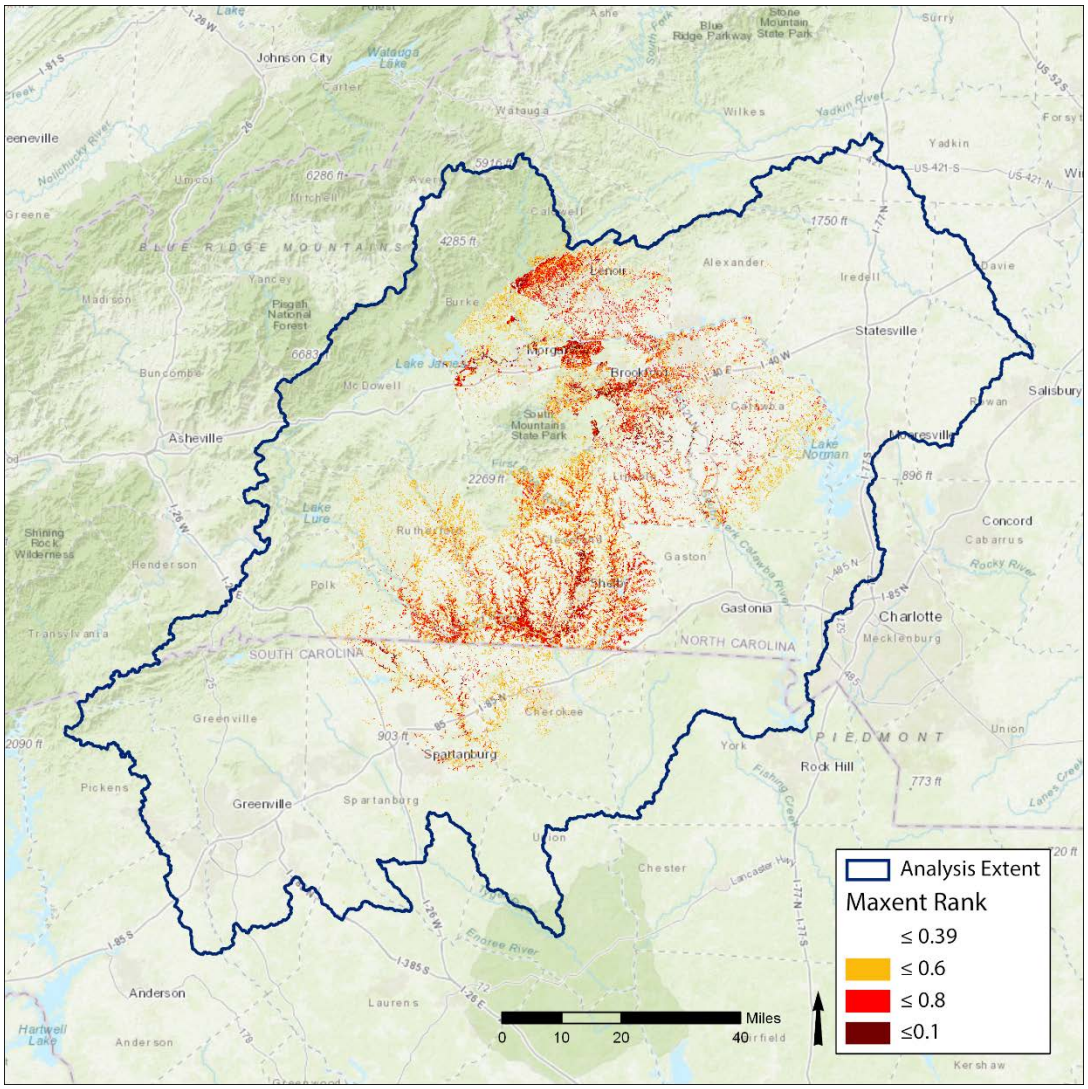
Maxent software for species habitat modeling (version 3.4.1) was used (Philips et al., 2018).

An initial single model Maxent run was done to determine which variables could be excluded due to limited percent contribution to the model. Any variable that contributed less than 1% to the single model run results was excluded in the final model. The following variables were excluded:

landcover diversity, canopy height, SSURGO drainage class, SSURGO hydrologic group, aspect 9-class, aspect 5-class, slope, solar radiation, and maximum annual temperature.

For the final model a 10-run replicate Maxent model was created using crossvalidation. For replicate models, the occurrence data is randomly split into a number of equal-sized groups called "folds", and separate models are created leaving out each fold in turn. The individual model runs are then averaged together to derive the final model. Cloglog output format was used. Cloglog output gives an estimate between 0 and 1 of probability of presence assuming an appropriate sampling design.

Figure 2. Maxent model output map.



Results

Figure 2 shows the model output. The minimum cutoff value (to determine if an area is considered potential habitat for a species) of 0.39 was determined by using the average 10th percentile training presence. The 10th percentile training presence uses the suitability threshold associated with the presence record that occurs at the 10th percentile of presence records (Phillips 2018). This value excludes some of the outlier population areas in the Maxent predictions to focus on the typical habitat conditions for this species. The total area ranked greater than 0.39 in the Maxent model was just 6.0% of the total analysis area (Table 1).

Table 1. Area estimates of the Maxent model

Maxent Score	Acres	Square Miles	Percent of Total
0.406 and greater	302,834.13	473.18	6.02%
0.6 and greater	128,273.52	200.43	2.55%
0.8 and greater	22,115.97	34.56	0.44%

The average area-under-curve (AUC) score for the replicate Maxent model is 0.86. The AUC is calculated from the receiver operating characteristic (ROC) plot. This value has a range of 0 – 1 and may be interpreted as a single test statistic that assesses model performance, indicating the ability of the model to correctly classify the occurrence data used. AUC values close to 0.50 indicate a model fit no better than random, values less than 0.5 indicate a model fit worse than random, a value of 1.0 indicate a perfect fit (Baldwin 2009). A value of 0.86 is a good fitting model.

The Maxent output supplies estimates of the relative contributions of the environmental variables to the Maxent model (Table 2.)

Table 2. Percent contribution of the environmental variables

Environmental Variable	Percent Contribution
SSURGO mukey	23.5%
Minimum Annual Temperature	17.8%
Average Annual Precipitation	15.7%
Landcover	12.9%
Landcover Majority	12.0%
Landcover Hexastylis Grouping	5.4%
Geomorphons	4.9%
Elevation	4.6%
Canopy Cover	3.2%

SSURGO mukey is the top contributing variable. 135 different individual soil types are present within the polygon boundaries of the Hexastylis element occurrences. Many of these individual soil types are part of soil complexes and are separated by things such as percent slope, erosion, how stony/rocky, and amount of clay. The most common individual soil type was Meadowfield-Rhodhiss complex, 25 to 60 percent slopes, very stony (14.1% of total). However, collectively the Meadowfield soils only comprised 14.3% of all soils). The individual Pacolet soil types were very common and collectively comprise 32.2% of all soil types present. Woolwine, Rion, and Fairview

soils were also collectively common, comprising 10.4%, 9.7%, and 8.8% of all soils present respectively.

The minimum annual average temperature range in the analysis extent is 39 – 51 degrees Fahrenheit. The majority of the Hexastylis element occurrences (89%) are found at the 47 and 48 degrees. The Average annual precipitation range in the analysis extent is 42 – 81 inches per year. The majority of the Hexastylis element occurrences (82%) are found in the 47 – 49 inches per year range.

Piedmont forested landcover habitats dominate the land area of the element occurrences. Southern Piedmont Dry Oak-Pine Forest – Hardwood Modifier (53%), Southern Piedmont Mesic Forest (9%), Southern Piedmont Dry Oak-Pine Forest (5.2%), Southern Piedmont Small Floodplain and Riparian Forest (4.4%), and collectively comprise 71% of the element occurrences area. Unfortunately, non-native habitats are also present. Evergreen Plantation or Managed Pine (9%), Harvested Forest (7.2%), Developed, Open Space (5%), Pasture/Hay (2.1%) collectively comprise 22% of the total element occurrence area. The Remaining 6 percent of element occurrence area is comprised of a mix of 14 other natural and disturbed landcover classes, but each at small percentages.

The landcover majority classification scheme reduces the total number of landcover classes present in the analysis extent from 23 to 11. Southern Piedmont Dry Oak-Pine Forest – Hardwood Modifier is still the dominant landcover class (58%). However disturbed categories are increased in area (sum total of 35%). Evergreen plantation or managed pine (12%) and Pasture/Hay (12%) are the only other categories that have at least 10% or greater area. The increase in disturbed landcover area representation in the landcover majority layer suggests that many Hexastylis population areas are situated in areas impacted by disturbed landcover. This is likely due to urban encroachment and increasing fragmentation of habitats.

The landcover Hexastylis grouping reveals the amount of disturbance present in Hexastylis population areas. Landcover classes grouped as disturbed comprises 27% of the total area. Mixed forest (deciduous and evergreen) comprises 58%, pasture/hay 12%, and hardwood forest 2%,

Geomorphons revealed that the majority of Hexastylis element occurrence areas are situated in concave landforms. Geomorphon categories hollow (13%), valley (46%), and depression (10%) collectively comprise 69% of all Hexastylis population areas. Flat landforms comprise 15.5% of the area and convex landforms the remaining 15.5%.

Within the analysis extent, the range of elevation present is 335 – 5,265 feet. For Hexastylis, the prime elevation range is from 666 – 908 feet (53% of total element occurrence area). A lesser elevation range is present from 935 – 1,184 (37% of total element occurrence area).

Canopy cover for the Hexastylis populations are dominated by Tree Cover 70-80% (20.2%) and Tree Cover 80-90% (63.9%). The rest of the canopy cover categories are 2% or less.

Citations

Baldwin, R.A. 2009. Use of maximum entropy modeling in wildlife research. Entropy. 11:854-866.

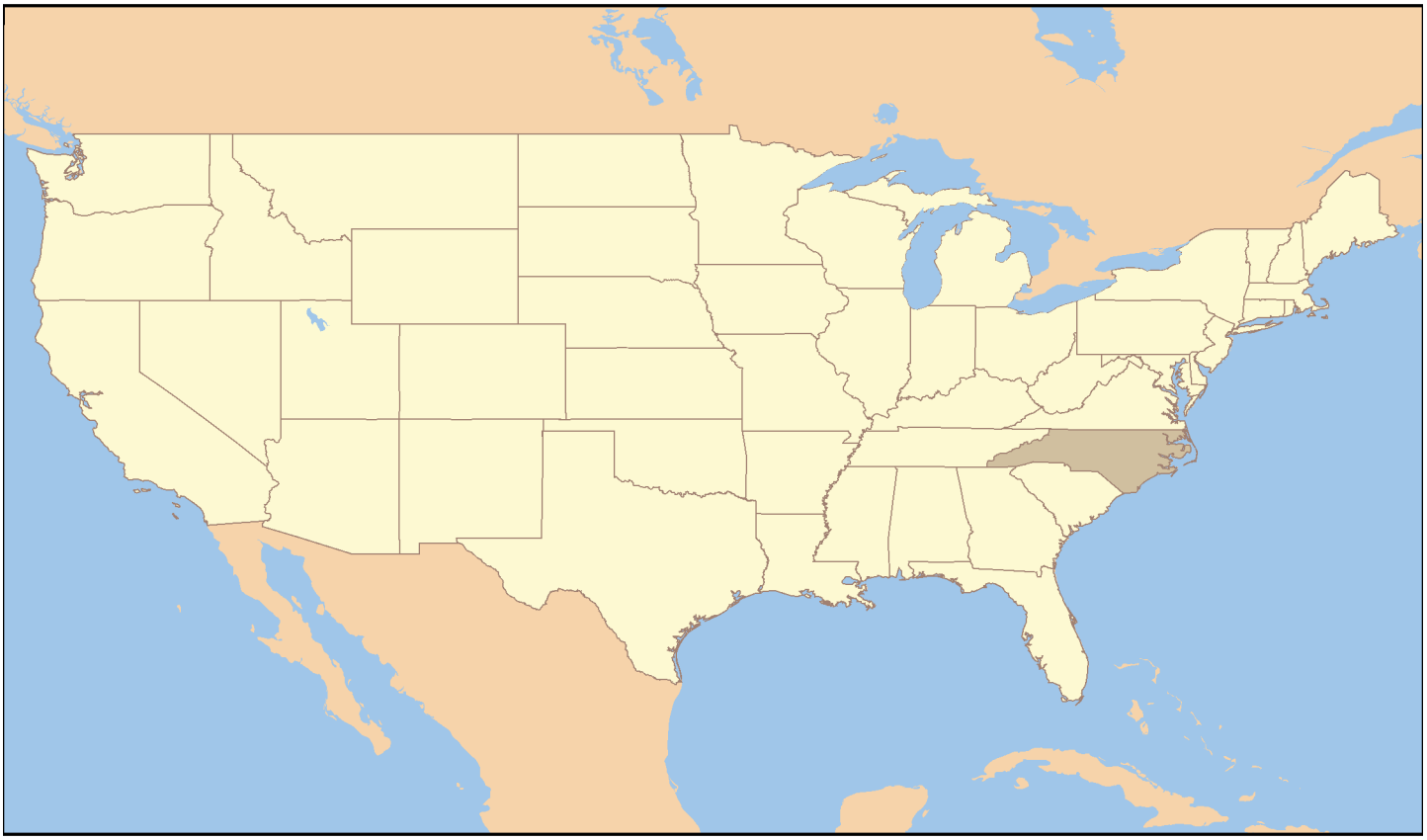
Phillips, S. J. 2018. A Brief Tutorial on Maxent. Available from url: http://biodiversityinformatics.amnh.org/open_source/maxent/. Accessed on 2018-02/21.

Steven J. Phillips, Miroslav Dudík, Robert E. Schapire. [Internet] Maxent software for modeling species niches and distributions (Version 3.4.1). Available from url: http://biodiversityinformatics.amnh.org/open_source/maxent/. Accessed on 2018-2-20.

Appendix 4a

U.S. Geological Survey - National Climate Change Viewer

Summary of North Carolina



December 1, 2016

1 Maximum 2-m Air Temperature

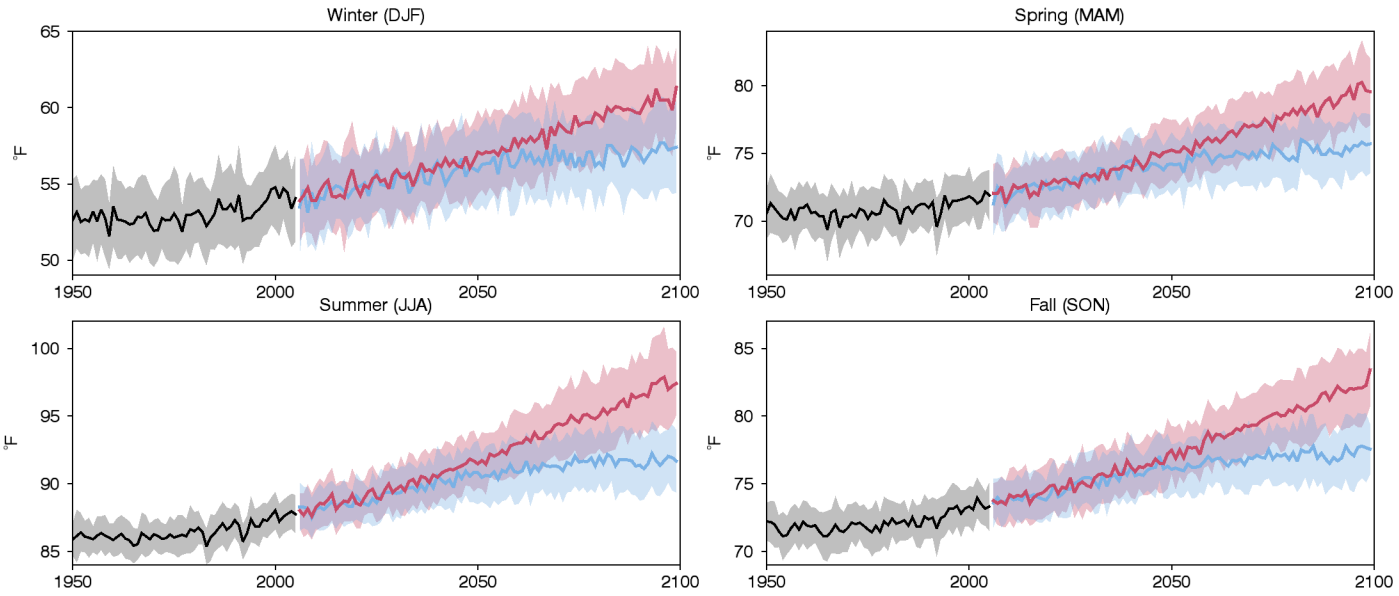


Figure 1: Seasonal average time series of maximum 2-m air temperature for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

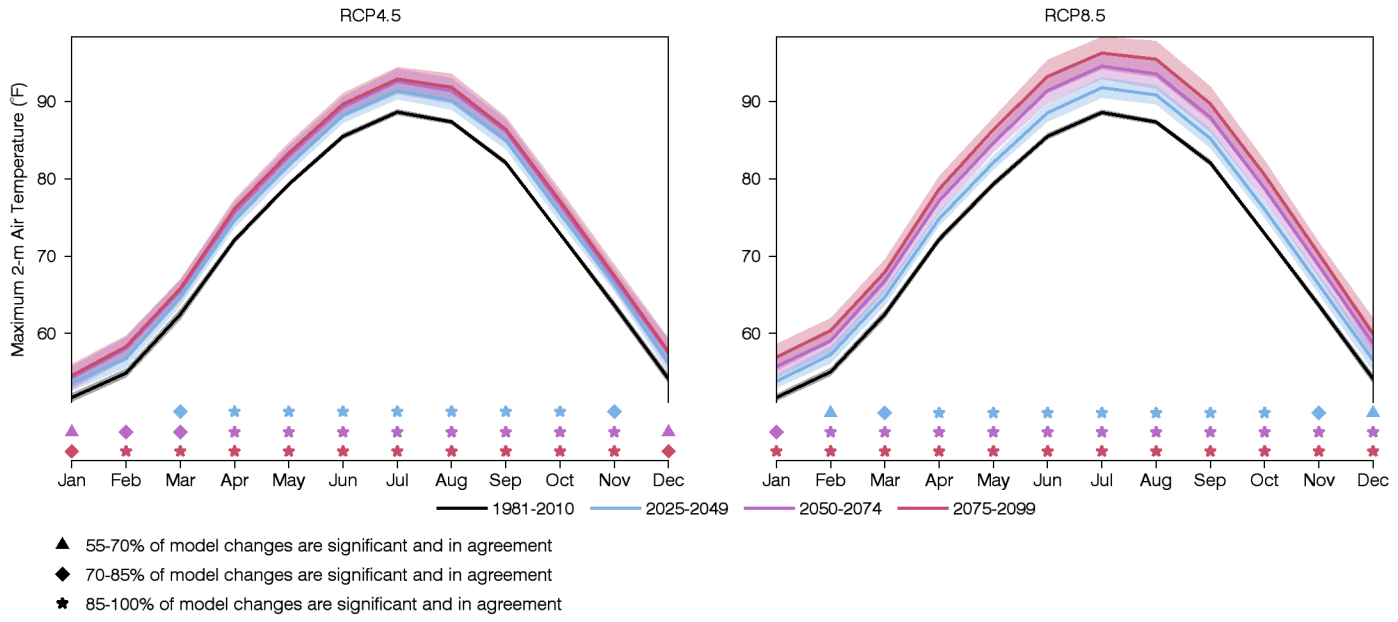


Figure 2: Monthly averages of maximum 2-m air temperature for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

2 Minimum 2-m Air Temperature

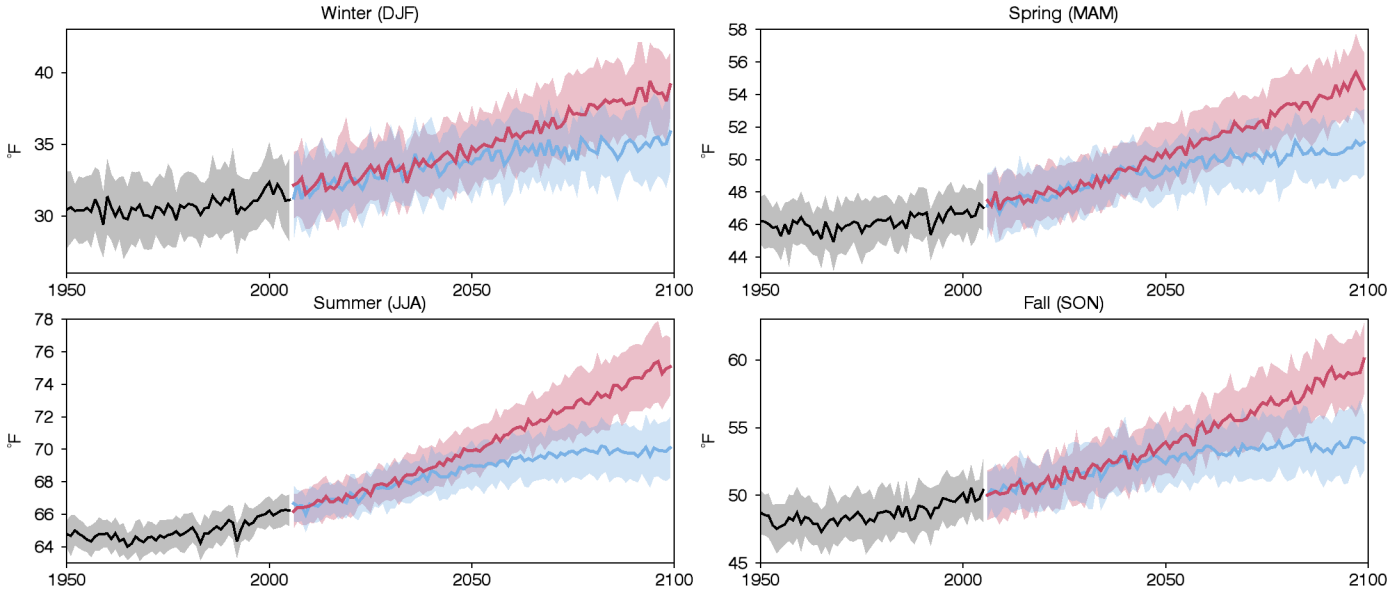


Figure 3: Seasonal average time series of minimum 2-m air temperature for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

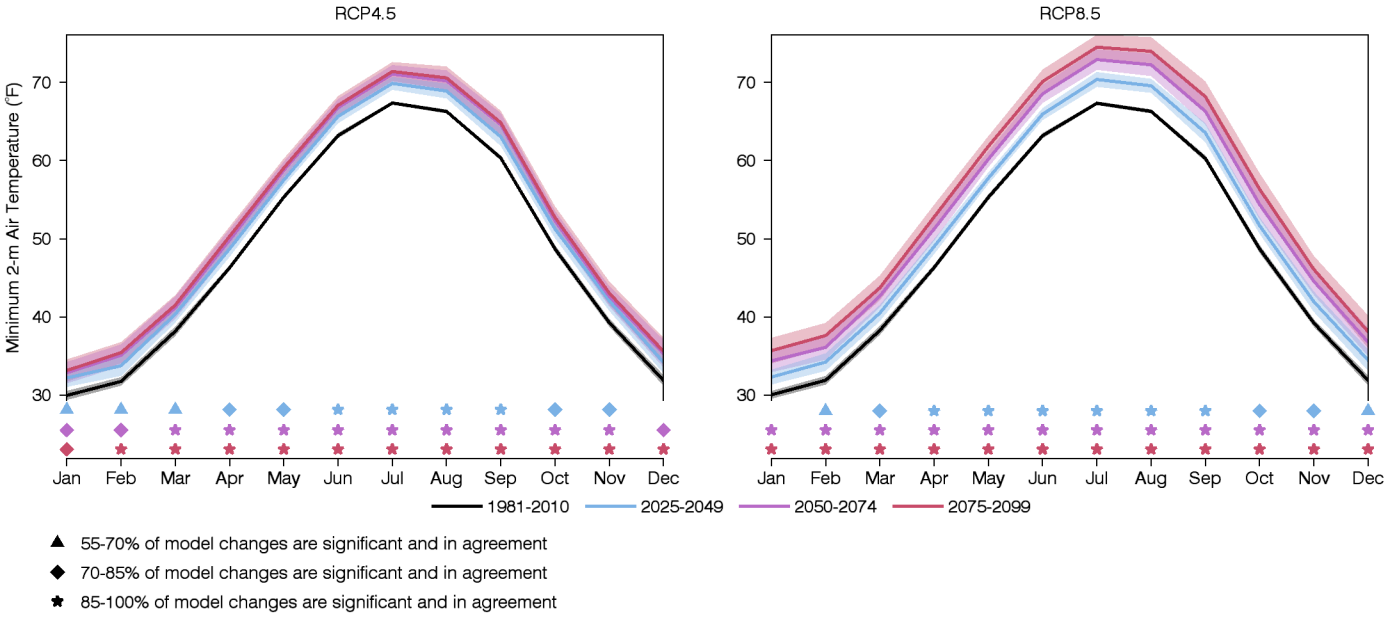


Figure 4: Monthly averages of minimum 2-m air temperature for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

3 Precipitation

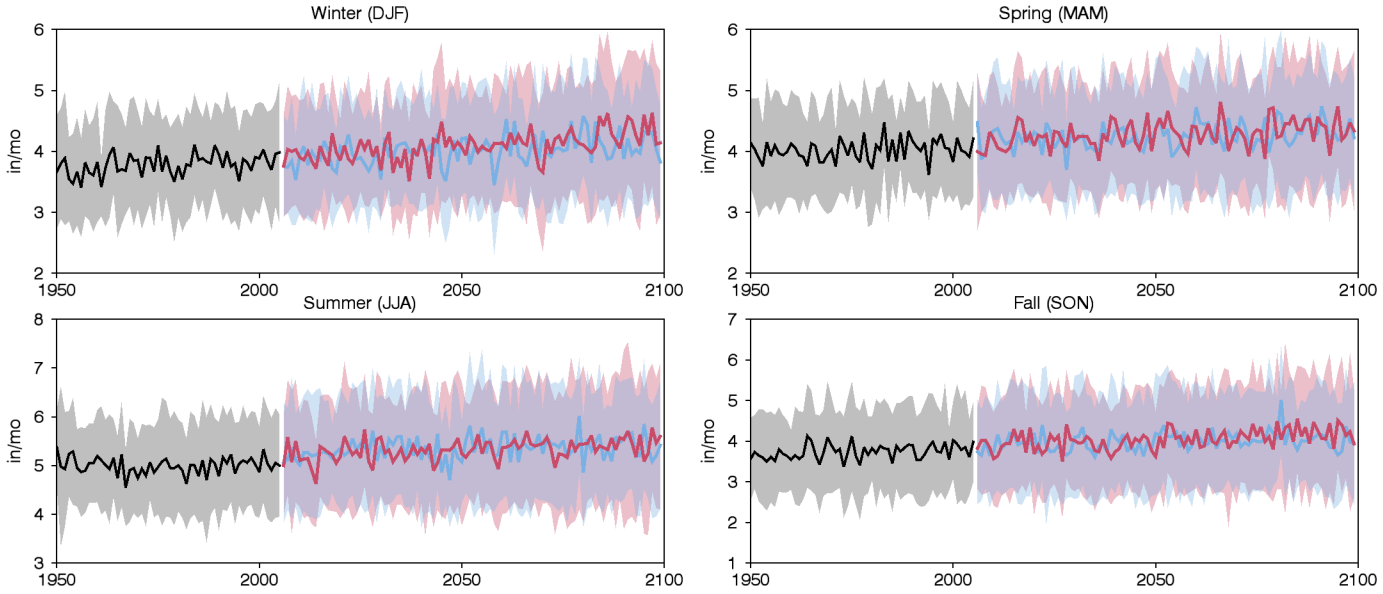


Figure 5: Seasonal average time series of precipitation for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

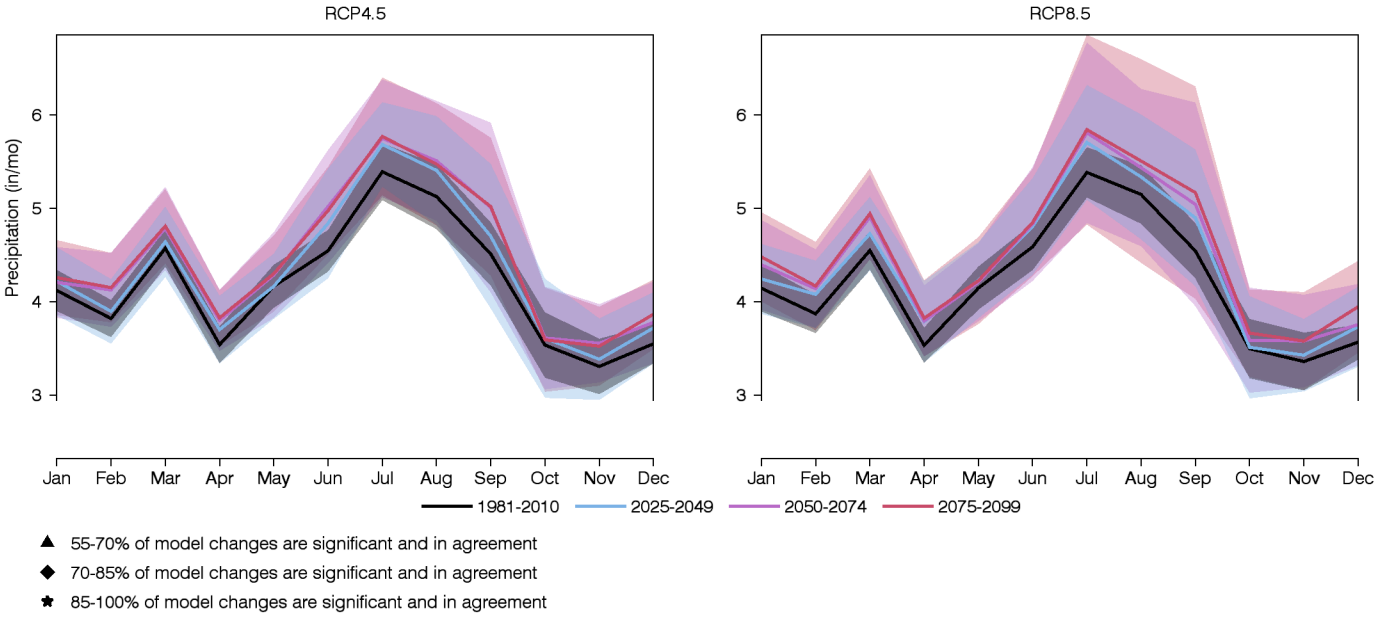


Figure 6: Monthly averages of precipitation for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

4 Snow Water Equivalent

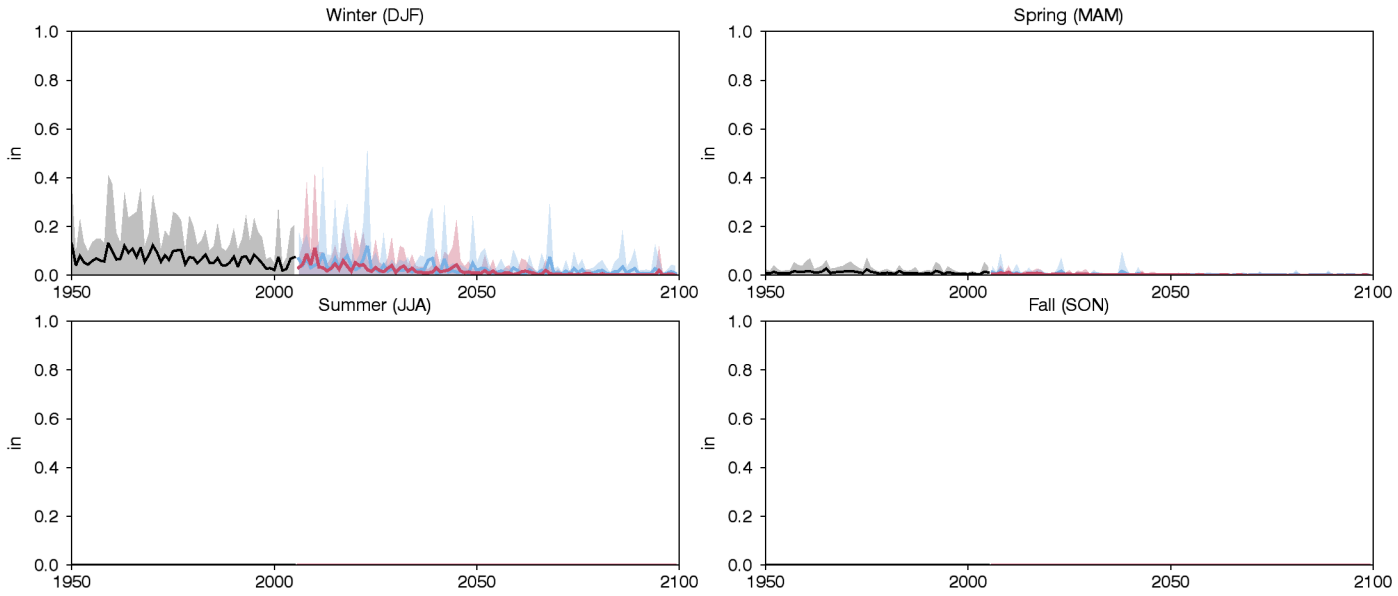


Figure 7: Seasonal average time series of snow water equivalent for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

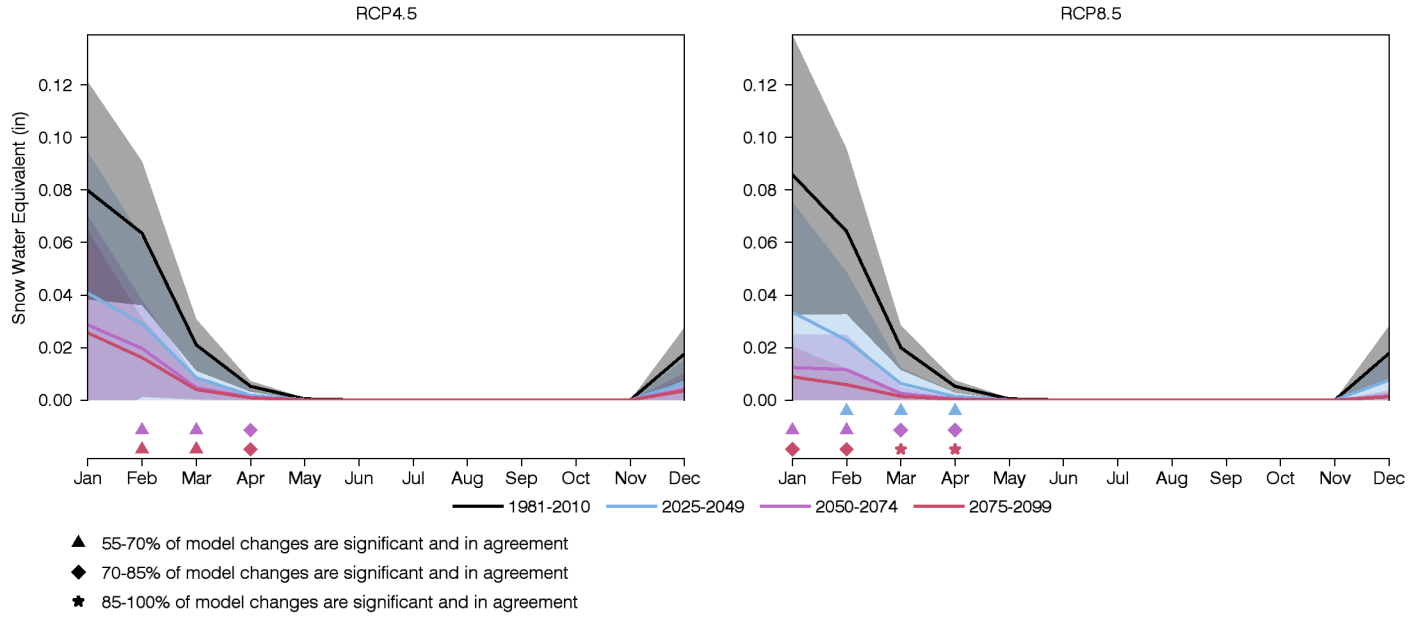


Figure 8: Monthly averages of snow water equivalent for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

5 Runoff

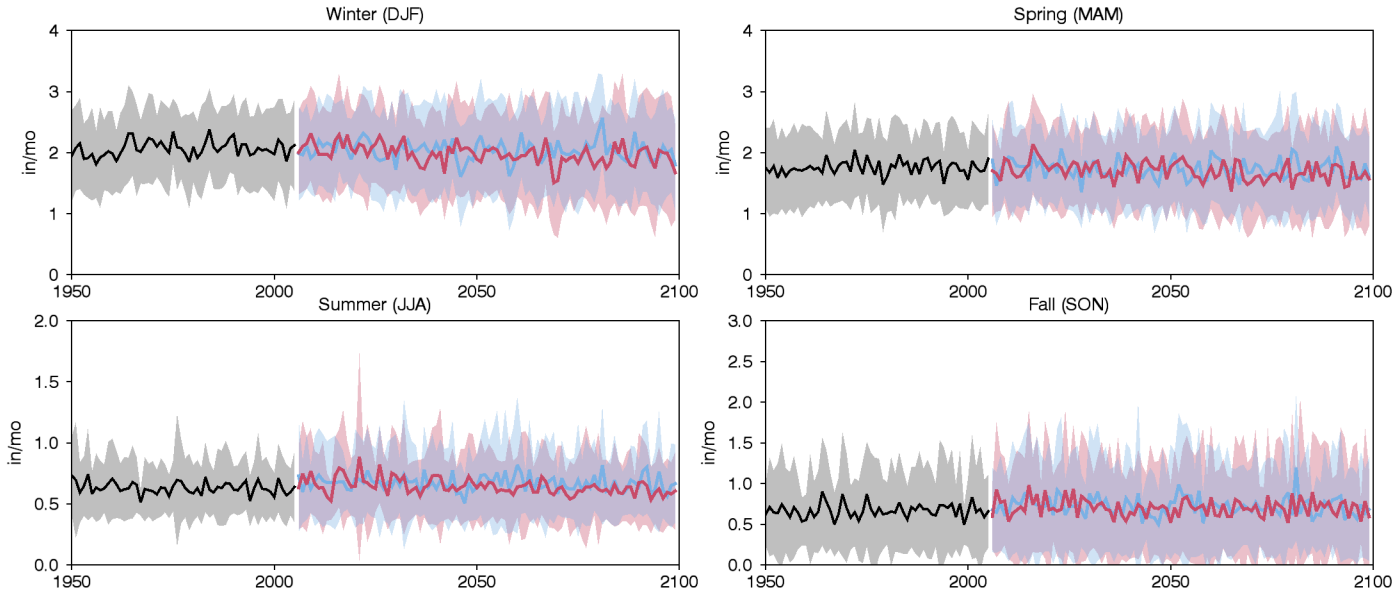


Figure 9: Seasonal average time series of runoff for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

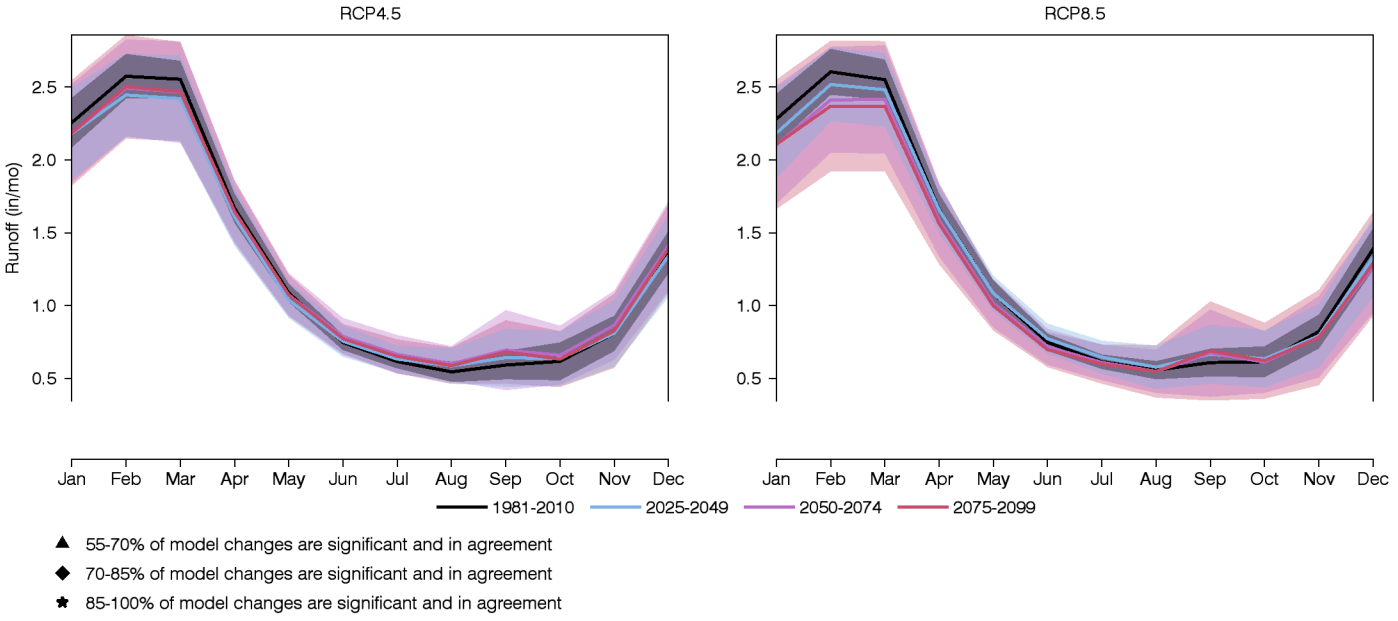


Figure 10: Monthly averages of runoff for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

6 Soil Water Storage

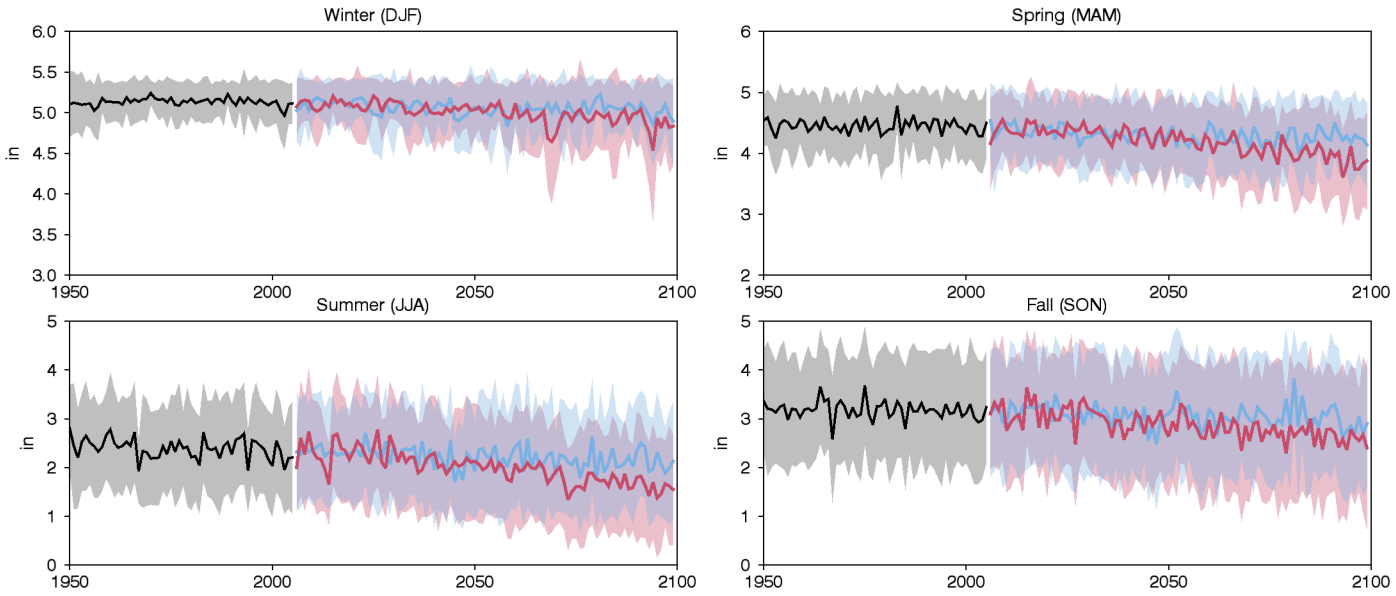


Figure 11: Seasonal average time series of soil water storage for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

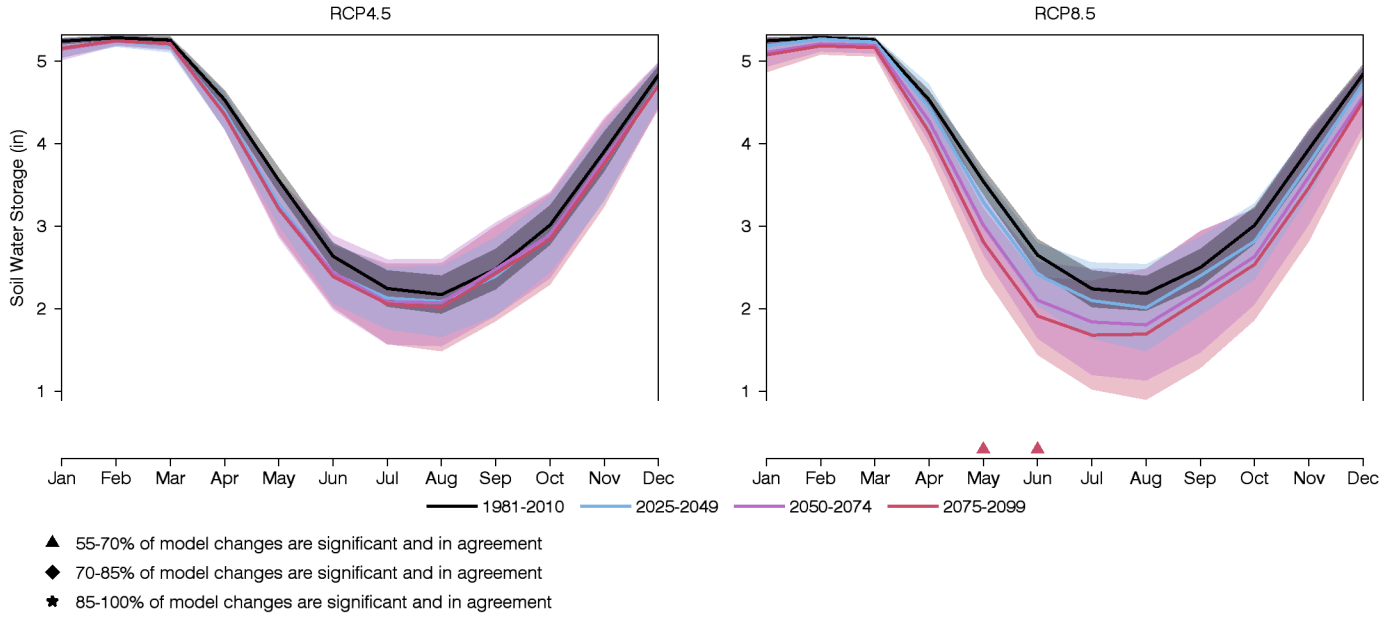


Figure 12: Monthly averages of soil water storage for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

7 Evaporative Deficit

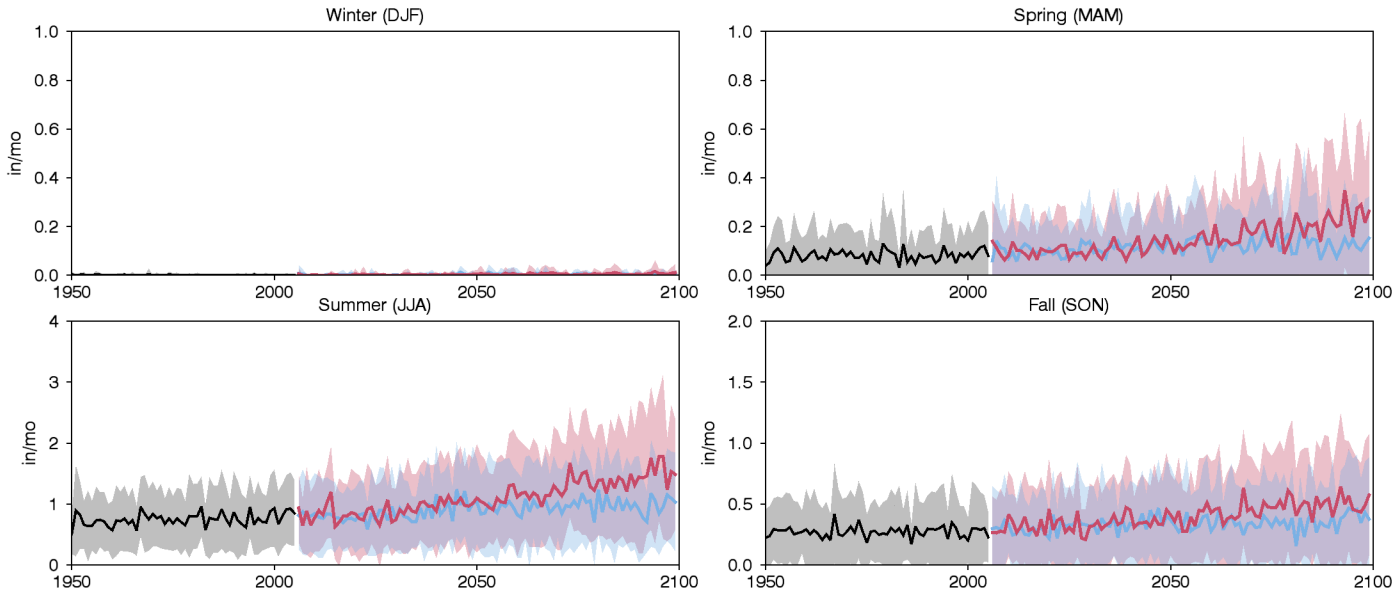


Figure 13: Seasonal average time series of evaporative deficit for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

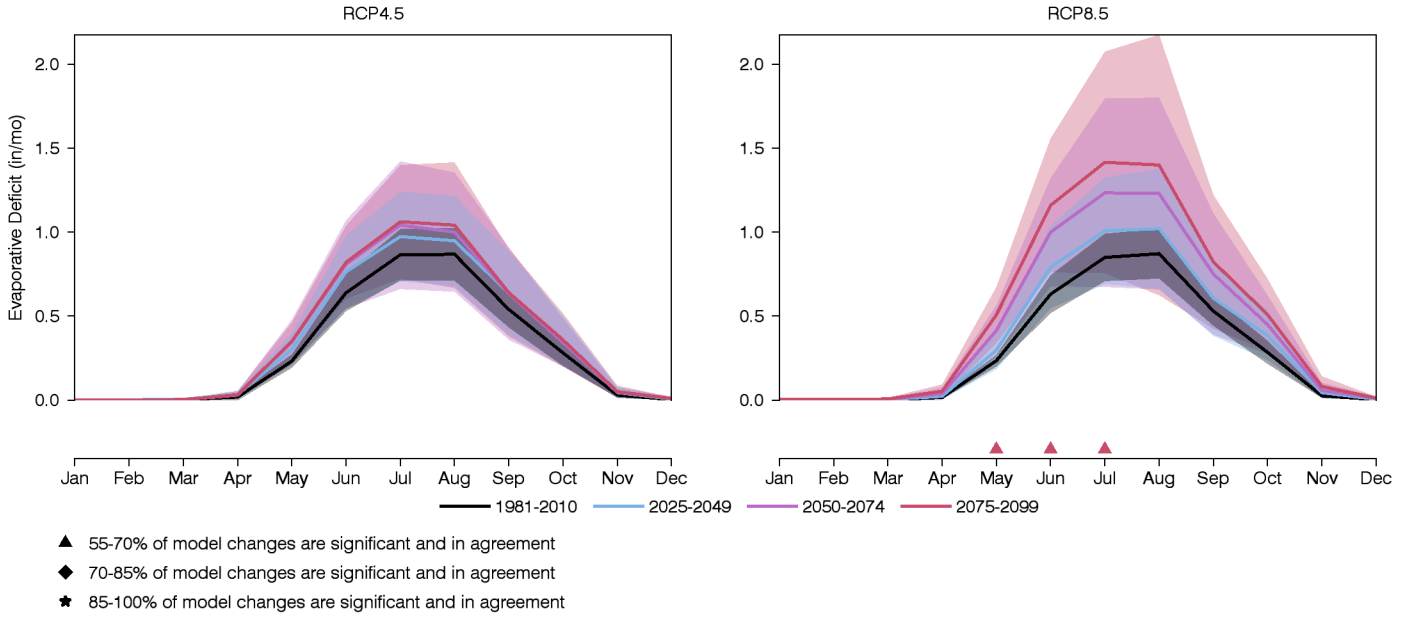


Figure 14: Monthly averages of evaporative deficit for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

8 Data

The temperature and precipitation summaries are created by spatially averaging the NASA NEX-DCP30 data set (Thrasher et al., 2013). The water-balance variables snow water equivalent, runoff, soil water storage and evaporative deficit are simulated by using the NEX-DCP30 temperature and precipitation as input to a simple model (McCabe and Wolock, 2007). The water-balance model accounts for the partitioning of water through the various components of the hydrologic system, but does not account for groundwater, diversions or regulation by impoundments.

9 Models

ACCESS1-0	bcc-csm1-1	bcc-csm1-1-m	BNU-ESM	CanESM2	CCSM4
CESM1-BGC	CMCC-CM	CNRM-CM5	CSIRO-Mk3-6-0	FGOALS-g2	FIO-ESM
GFDL-CM3	GFDL-ESM2G	GFDL-ESM2M	GISS-E2-R	HadGEM2-AO	HadGEM2-CC
HadGEM2-ES	inmcm4	IPSL-CM5A-LR	IPSL-CM5A-MR	IPSL-CM5B-LR	MIROC5
MIROC-ESM	MIROC-ESM-CHEM	MPI-ESM-LR	MPI-ESM-MR	MRI-CGCM3	NorESM1-M

10 Citation Information

Alder, J. R. and S. W. Hostetler, 2013. USGS National Climate Change Viewer. US Geological Survey `http://www.usgs.gov/climate_landuse/clu_rd/nccv.asp` doi:10.5066/F7W9575T.

Hostetler, S.W. and Alder, J.R., 2016. Implementation and evaluation of a monthly water balance model over the U.S. on an 800 m grid. Water Resources Research, 52, doi:10.1002/2016WR018665.

Thrasher, B., J. Xiong, W. Wang, F. Melton, A. Michaelis, and R. Nemani, 2013. New downscaled climate projections suitable for resource management in the U.S. Eos, Transactions American Geophysical Union 94, 321-323, doi:10.1002/2013EO370002.

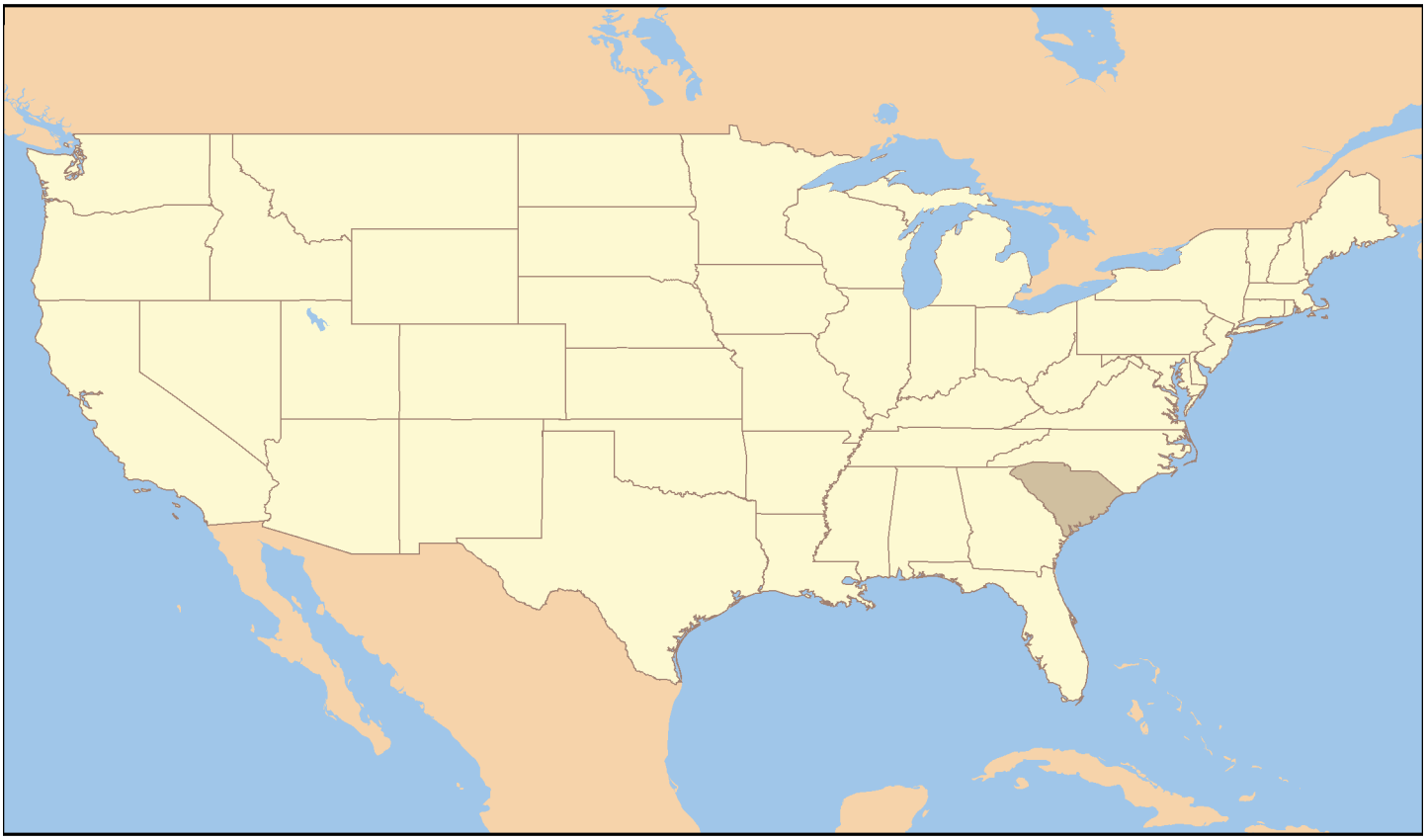
11 Disclaimer

These freely available, derived data sets were produced by J. Alder and S. Hostetler, US Geological Survey (USGS). The original climate data are from the NEX-DCP30 dataset, which was prepared by the Climate Analytics Group and NASA Ames Research Center using the NASA Earth Exchange, and is distributed by the NASA Center for Climate Simulation. No warranty expressed or implied is made by the USGS regarding the display or utility of the derived data on any other system, or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. The USGS shall not be held liable for improper or incorrect use of the data described and/or contained herein.

Appendix 4b

U.S. Geological Survey - National Climate Change Viewer

Summary of South Carolina



December 1, 2016

1 Maximum 2-m Air Temperature

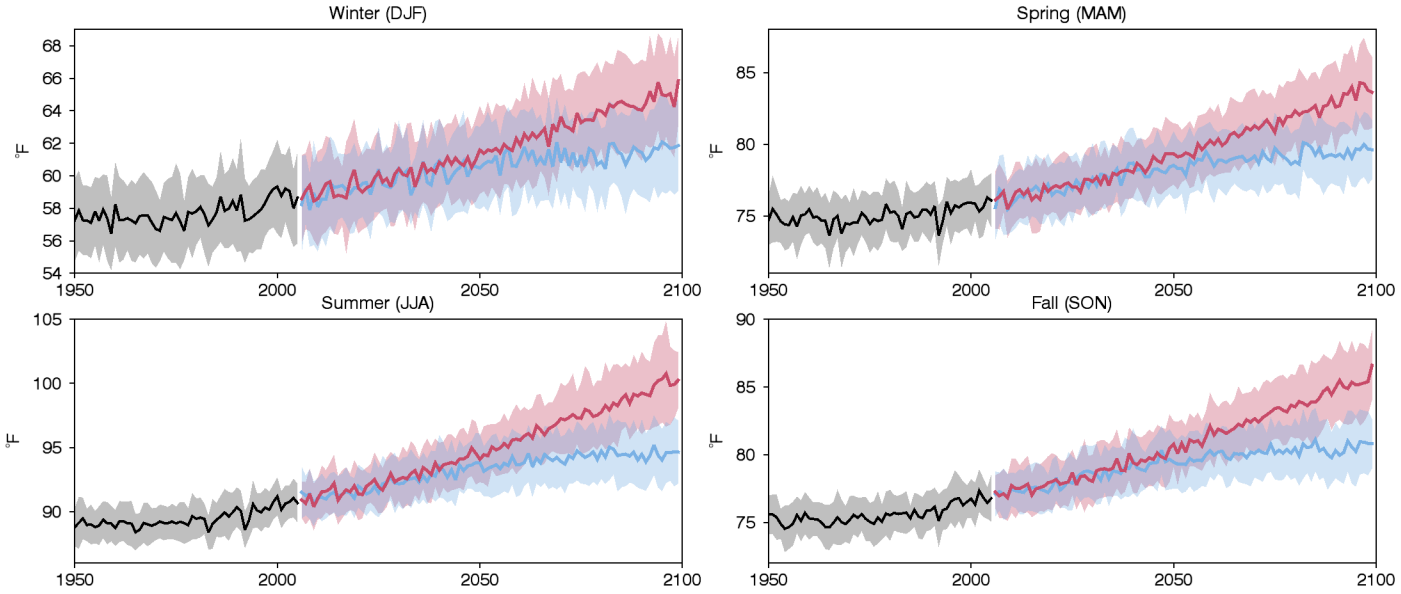


Figure 1: Seasonal average time series of maximum 2-m air temperature for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

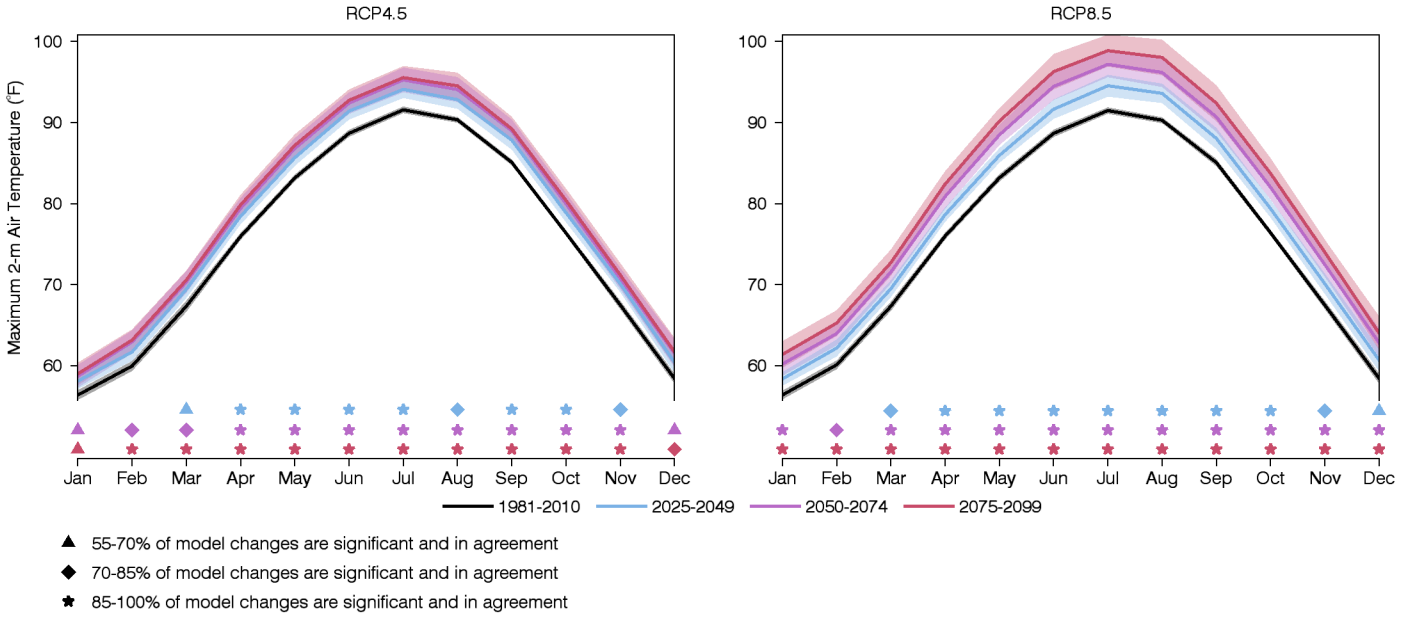


Figure 2: Monthly averages of maximum 2-m air temperature for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

2 Minimum 2-m Air Temperature

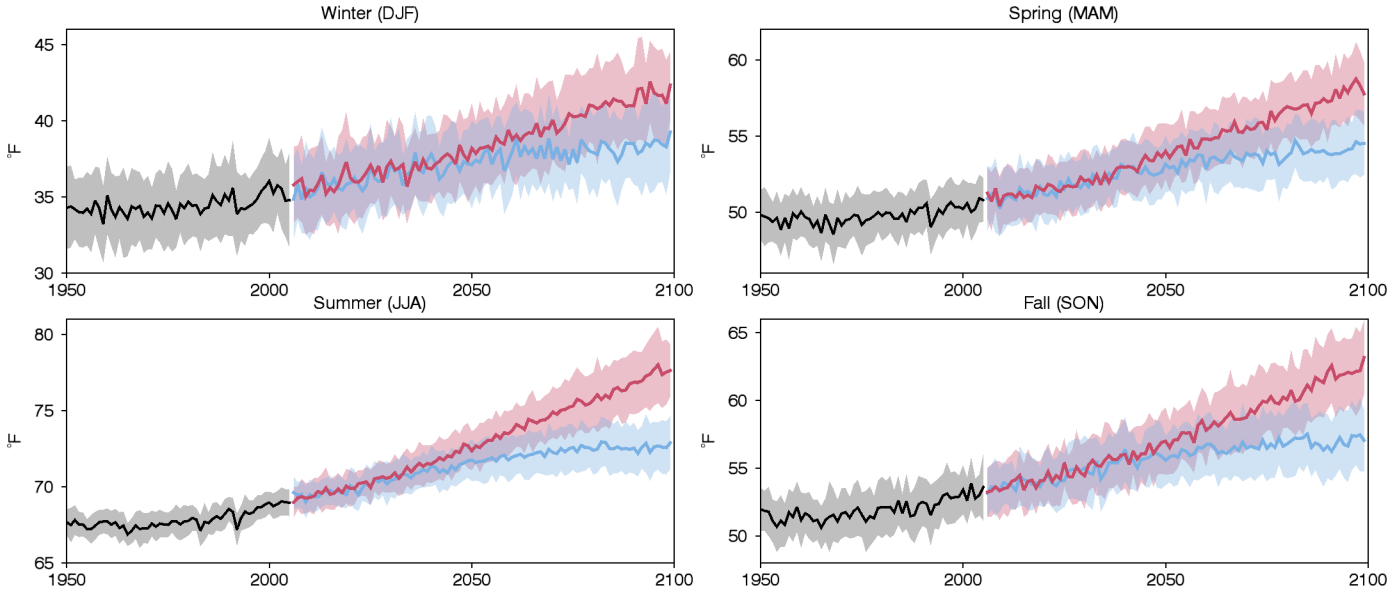


Figure 3: Seasonal average time series of minimum 2-m air temperature for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

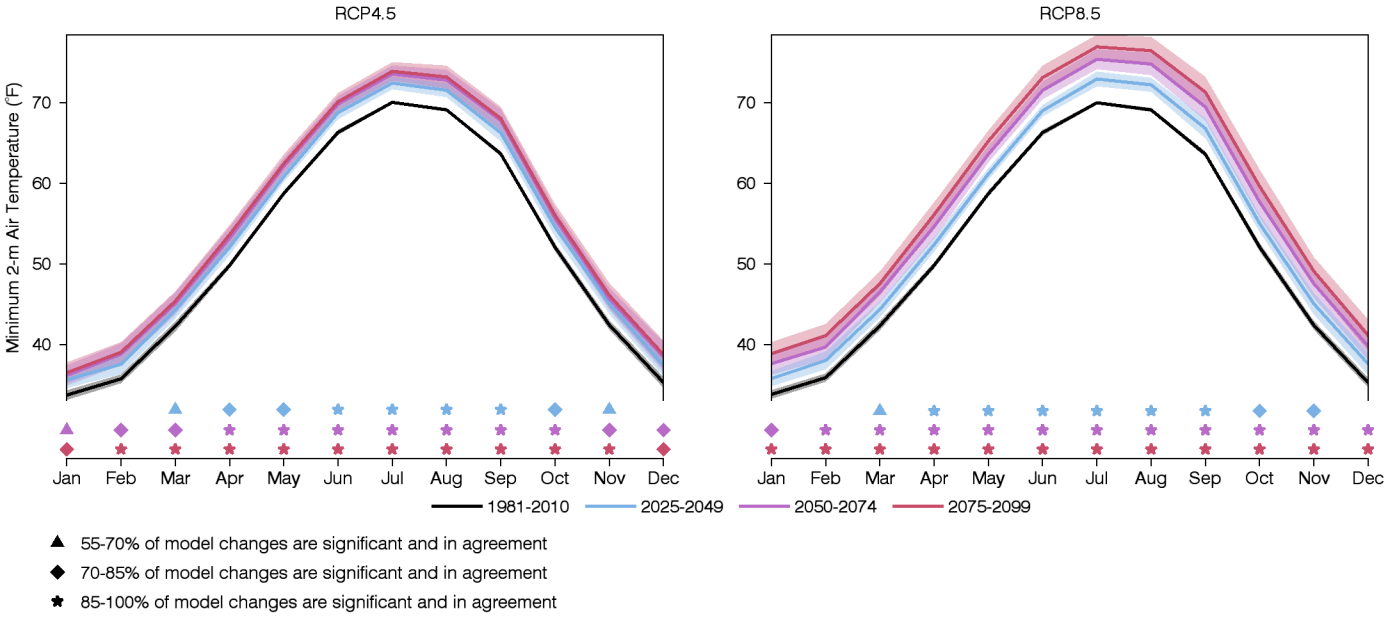


Figure 4: Monthly averages of minimum 2-m air temperature for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

3 Precipitation

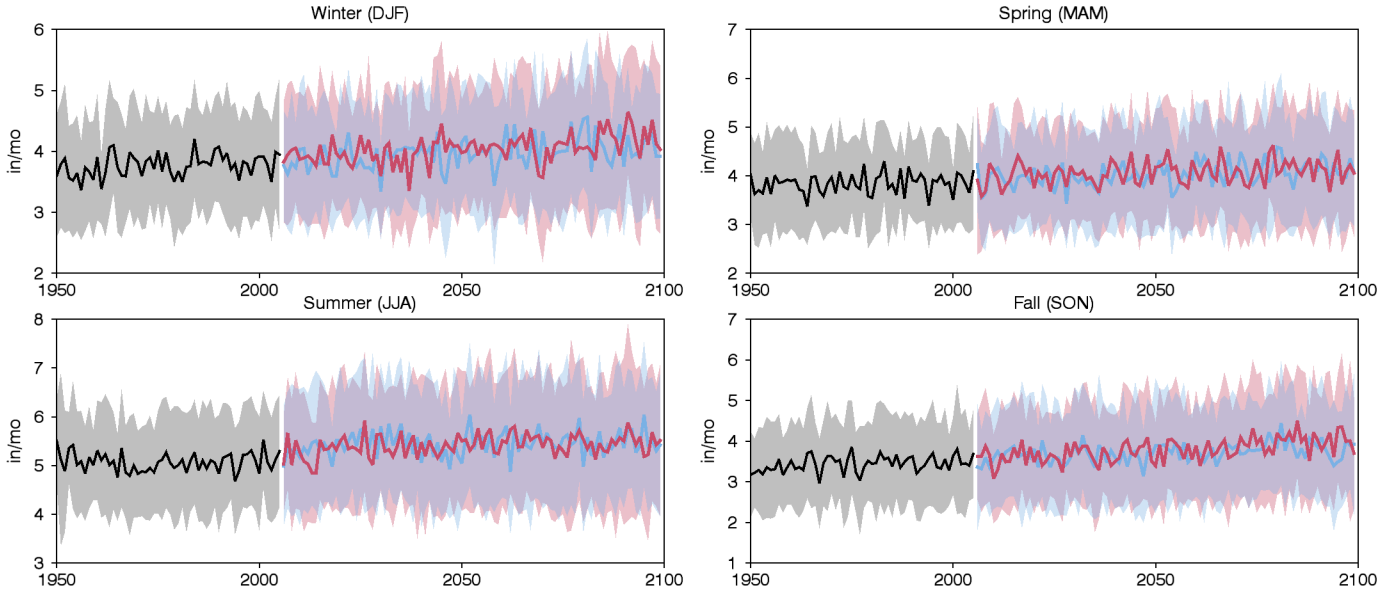


Figure 5: Seasonal average time series of precipitation for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

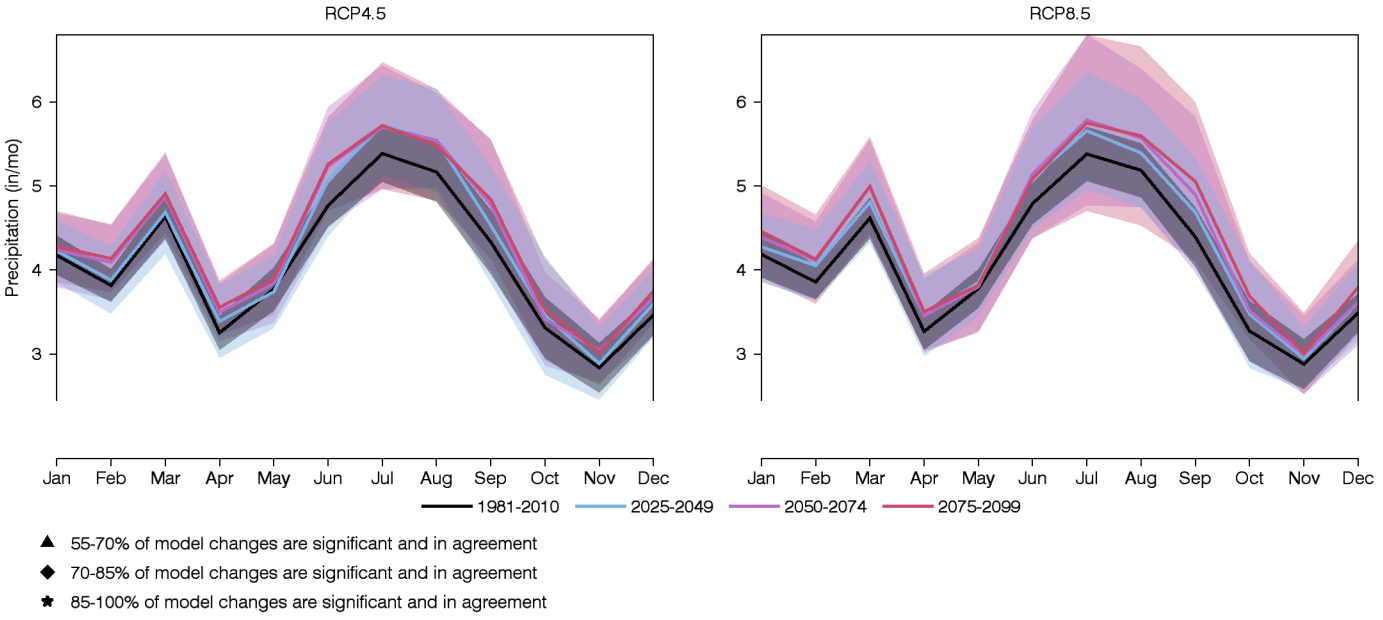


Figure 6: Monthly averages of precipitation for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

4 Snow Water Equivalent

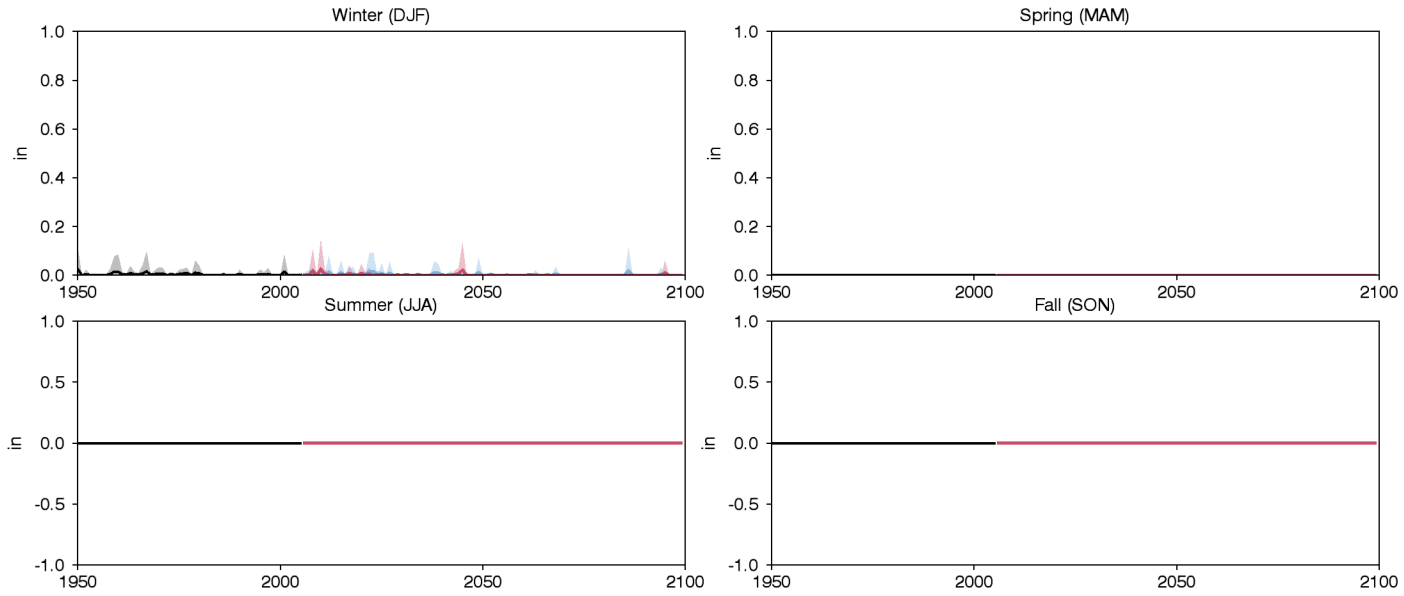


Figure 7: Seasonal average time series of snow water equivalent for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

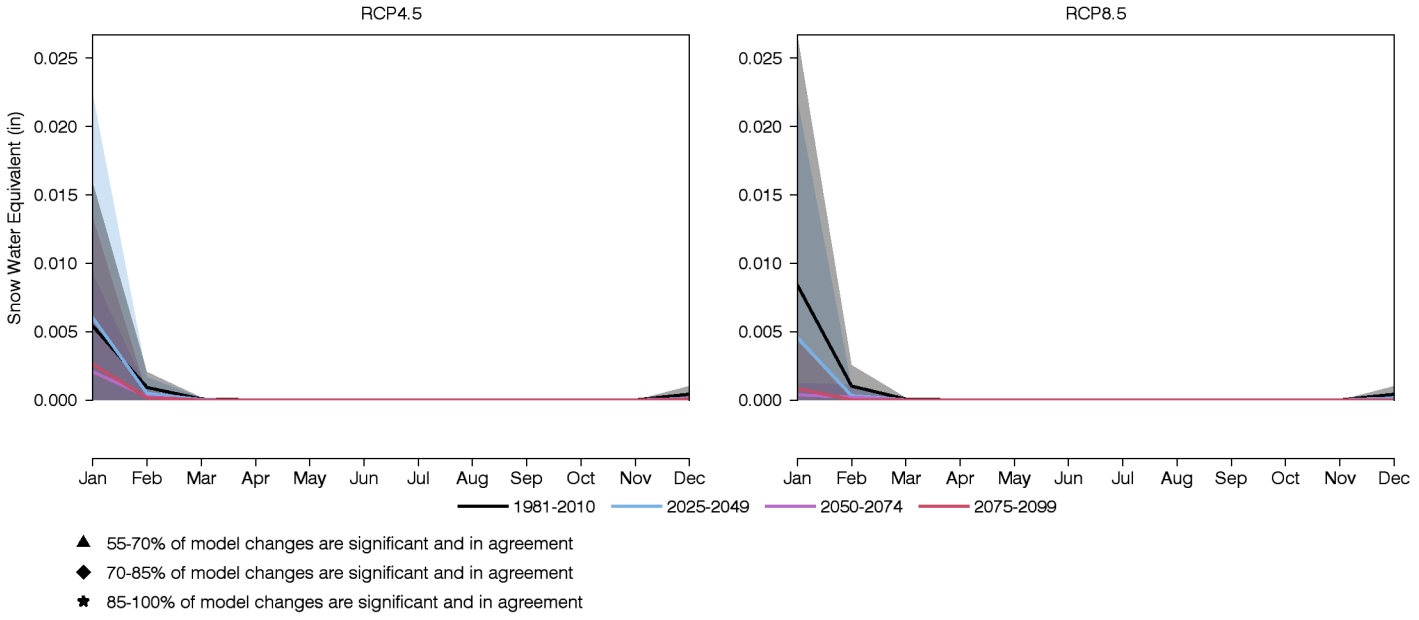


Figure 8: Monthly averages of snow water equivalent for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

5 Runoff

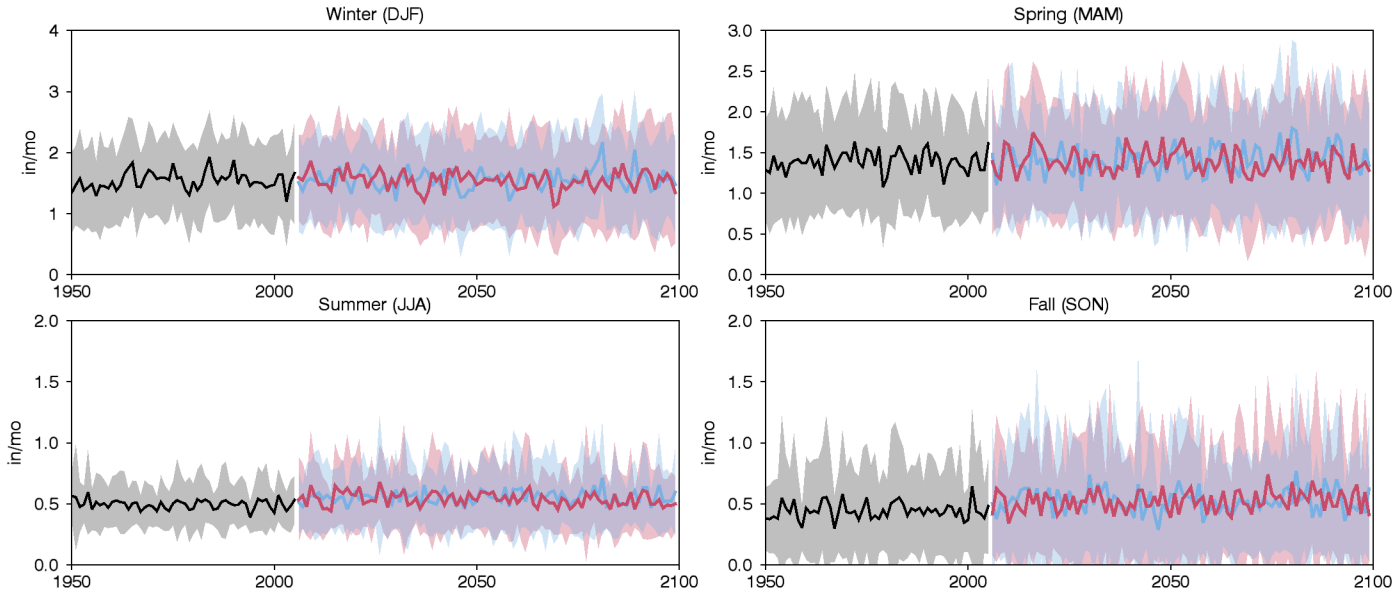


Figure 9: Seasonal average time series of runoff for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

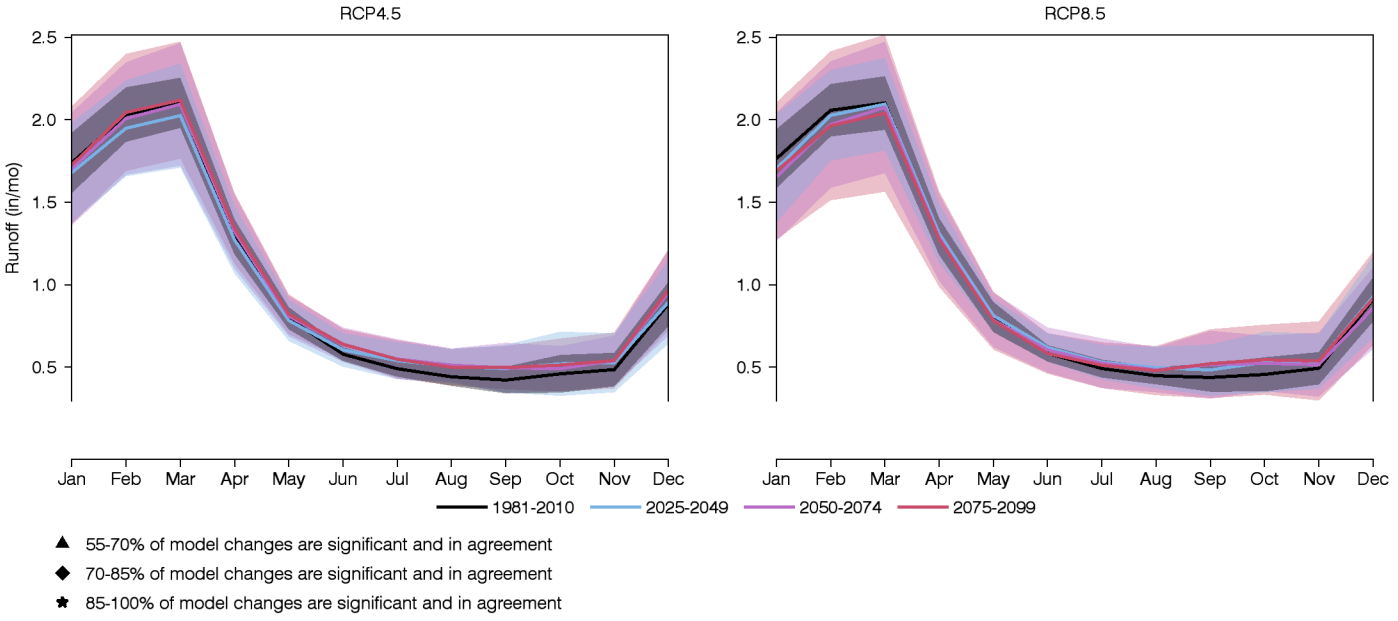


Figure 10: Monthly averages of runoff for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

6 Soil Water Storage

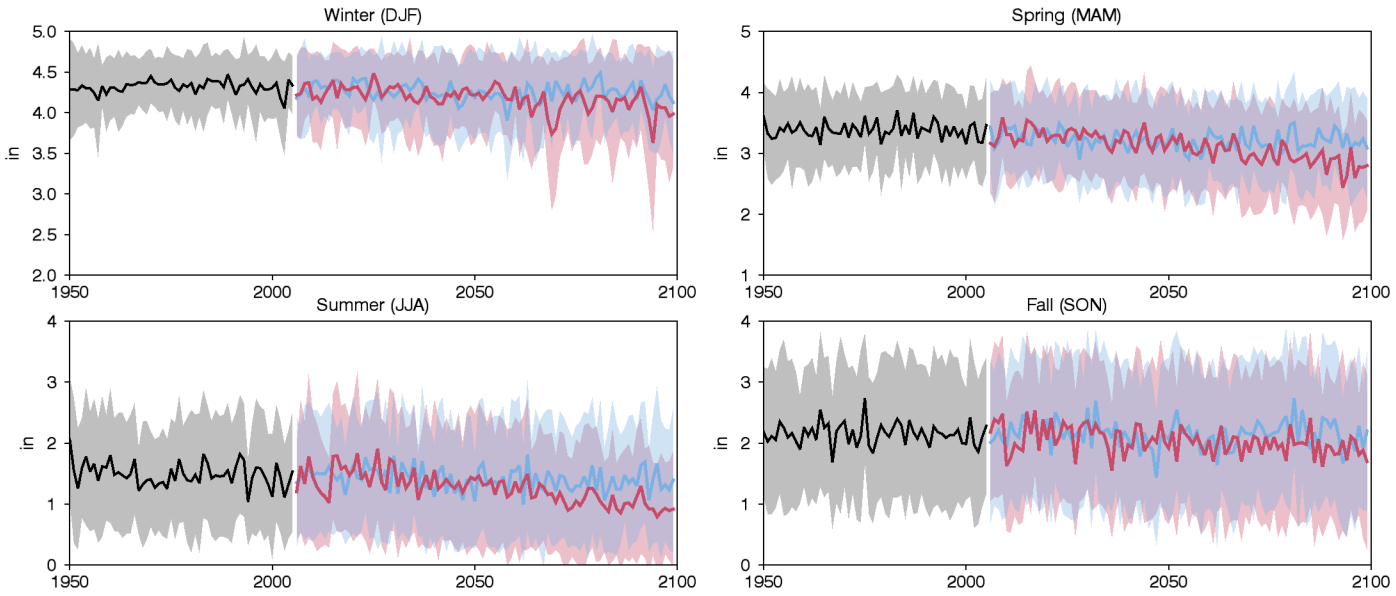


Figure 11: Seasonal average time series of soil water storage for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

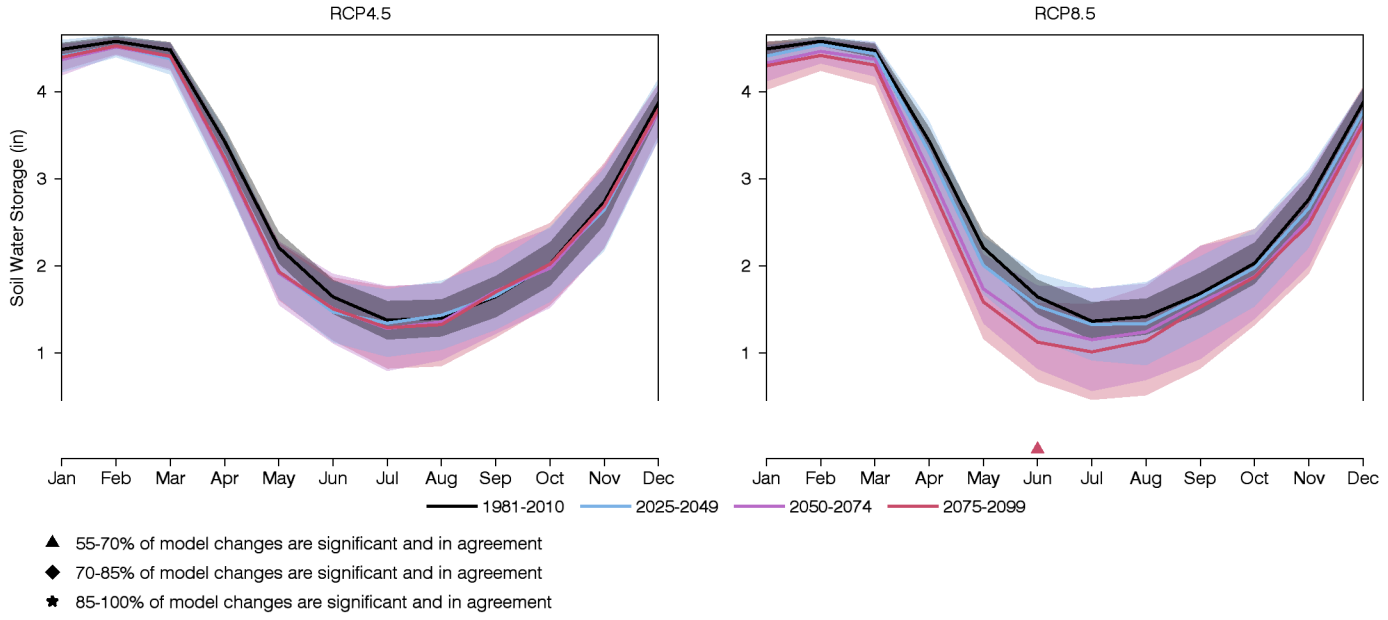


Figure 12: Monthly averages of soil water storage for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

7 Evaporative Deficit

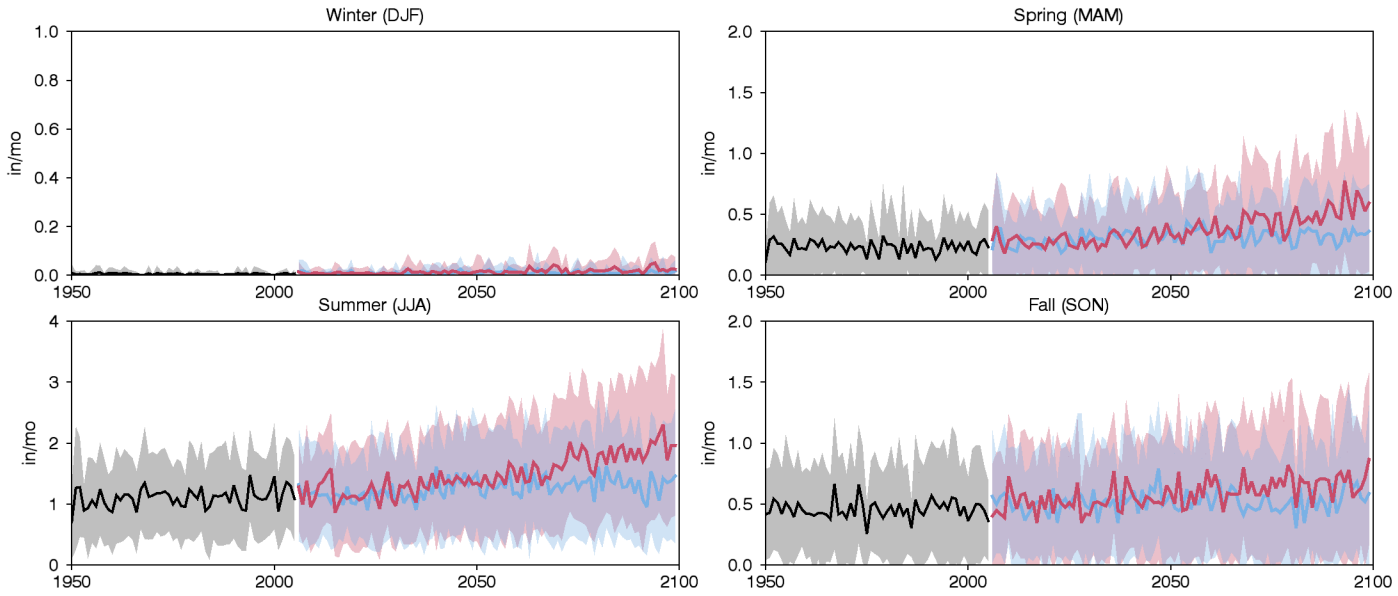


Figure 13: Seasonal average time series of evaporative deficit for historical (black), RCP4.5 (blue) and RCP8.5 (red). The historical period ends in 2005 and the future periods begin in 2006. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes.

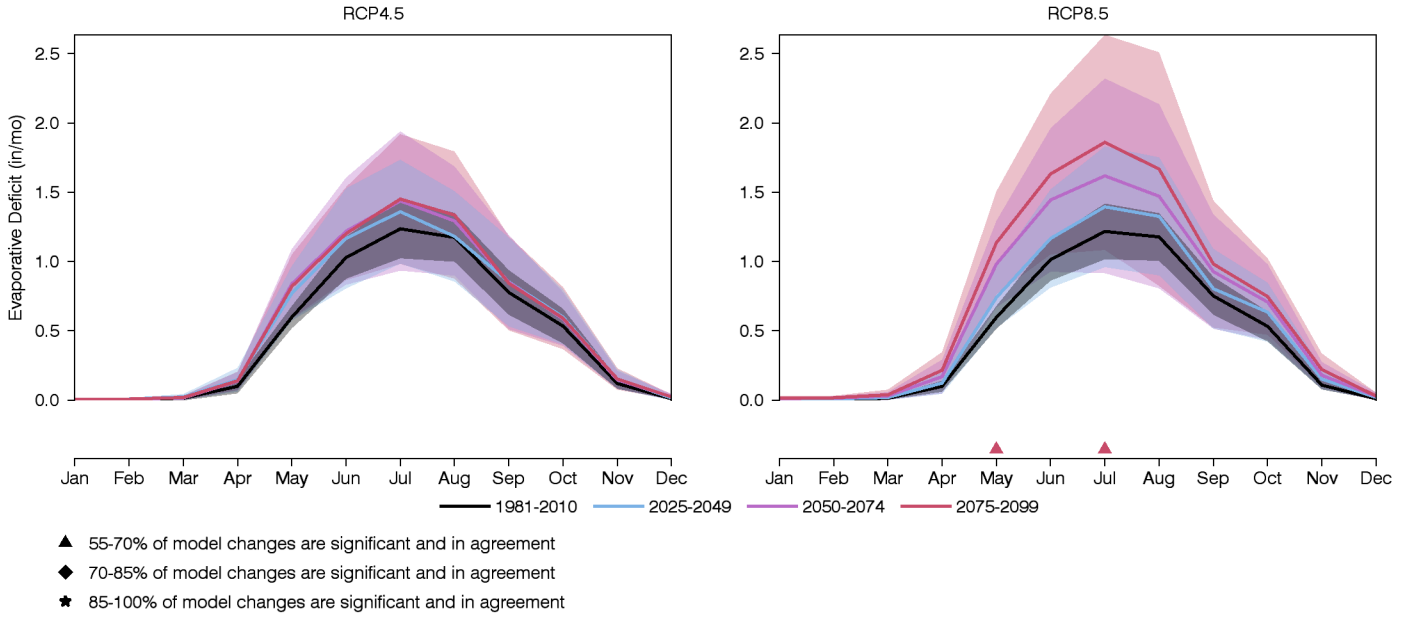


Figure 14: Monthly averages of evaporative deficit for four time periods for the RCP4.5 (left) and RCP8.5 (right) simulations. The average of 30 CMIP5 models is indicated by the solid lines and their standard deviations are indicated by the respective shaded envelopes. Triangle, diamond and square symbols indicate the percent of models that simulate future minus present changes that are of the same sign and significant. A two-sided Students t-test is used to establish significance ($\rho \leq 0.05$).

8 Data

The temperature and precipitation summaries are created by spatially averaging the NASA NEX-DCP30 data set (Thrasher et al., 2013). The water-balance variables snow water equivalent, runoff, soil water storage and evaporative deficit are simulated by using the NEX-DCP30 temperature and precipitation as input to a simple model (McCabe and Wolock, 2007). The water-balance model accounts for the partitioning of water through the various components of the hydrologic system, but does not account for groundwater, diversions or regulation by impoundments.

9 Models

ACCESS1-0	bcc-csm1-1	bcc-csm1-1-m	BNU-ESM	CanESM2	CCSM4
CESM1-BGC	CMCC-CM	CNRM-CM5	CSIRO-Mk3-6-0	FGOALS-g2	FIO-ESM
GFDL-CM3	GFDL-ESM2G	GFDL-ESM2M	GISS-E2-R	HadGEM2-AO	HadGEM2-CC
HadGEM2-ES	inmcm4	IPSL-CM5A-LR	IPSL-CM5A-MR	IPSL-CM5B-LR	MIROC5
MIROC-ESM	MIROC-ESM-CHEM	MPI-ESM-LR	MPI-ESM-MR	MRI-CGCM3	NorESM1-M

10 Citation Information

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Hostetler, S.W. and Alder, J.R., 2016. Implementation and evaluation of a monthly water balance model over the U.S. on an 800 m grid. Water Resources Research, 52, doi:10.1002/2016WR018665.

Thrasher, B., J. Xiong, W. Wang, F. Melton, A. Michaelis, and R. Nemani, 2013. New downscaled climate projections suitable for resource management in the U.S. Eos, Transactions American Geophysical Union 94, 321-323, doi:10.1002/2013EO370002.

11 Disclaimer

These freely available, derived data sets were produced by J. Alder and S. Hostetler, US Geological Survey (USGS). The original climate data are from the NEX-DCP30 dataset, which was prepared by the Climate Analytics Group and NASA Ames Research Center using the NASA Earth Exchange, and is distributed by the NASA Center for Climate Simulation. No warranty expressed or implied is made by the USGS regarding the display or utility of the derived data on any other system, or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. The USGS shall not be held liable for improper or incorrect use of the data described and/or contained herein.

Appendix 5

Protected status of current populations throughout the range of the dwarf-flowered heartleaf. Protected status is as follows: 1-protected in perpetuity; 2-protected, but not in perpetuity; 3-not protected.

Population Number	Protection Status
1	1
2	1
3	1
4	1
5	3
2	2 (part)
23	3
29	3
31	2 (part)
44	1
59	2(part)
71	3
77	1
85	3
93	3
96	1 (part)
98	3
99	2 (part)
100	1 (part)
124	3
125	2
130	3
154	1
157	3
158	2/3
176	3
177	3
178	2
179	2(part)
183	1
195	3
206	3
208	2
214	2 (part)
216	2 (part)
217	1
219	3
226	1 (part)
227	1
229	1
232	3
243	1/2 (part)
245	2/3
247	1 (part)

248	3
252	?
261	3
271	1
272	3
274	3
275	3
276	2
279	3
287	1
291	2(part)
292	3
293	3
295	2 (part)
296	3
297	3
298	3
299	3
300	3
302	1 (part)
303	1/2
304	1
306	3
307	2(part)
308	2 (part)
309	3
311	1
312	1
316	?
317	3
318	2 (part)
320	3
321	3
Rock Barn Solar Farm	1

Chapter 1: INTRODUCTION

The dwarf-flowered heartleaf (*Hexastylis naniflora*) is a species of plant endemic to the upper Piedmont region of western North Carolina and upstate South Carolina. The dwarf-flowered heartleaf has been listed as threatened under the Endangered Species Act of 1973, as amended (Act), since 1989 (FR 54 14964-14967). The Species Status Assessment (SSA) framework (USFWS 2016, entire) summarizes the information compiled and reviewed by the US Fish and Wildlife Service (Service), incorporating the best available scientific and commercial data, to conduct an in-depth review of the species' biology and threats, evaluate its biological status, and assess the resources and conditions needed to maintain long-term viability. The intent is for the SSA to be easily updated as new information becomes available and to support all functions of the Endangered Species Program from listing to consultations to recovery.

A Recovery Plan for the species was never completed. However, over the last 29 years, the Service has worked closely with partners to make significant progress toward recovery of the species. The Service is initiating this SSA to aid in determining the appropriateness of reclassifying the species. In the event that the SSA does not support reclassification, the SSA will be used to inform the development of a Recovery Plan. Importantly, the SSA does not result in a decision by the Service on whether this species should be proposed for reclassification under the Act. Instead, this SSA provides a review of the available information strictly related to the biological status of the dwarf-flowered heartleaf. The reclassification decision will be made by the Service after reviewing this document and all relevant laws, regulations, and policies. The results of a proposed decision will be announced in the *Federal Register*, with appropriate opportunities for public input.

For the purpose of this assessment, we generally define viability as the ability of the species to sustain populations in its natural systems over time. Using the SSA framework (Figure 1.1), we consider what the species needs to maintain viability by characterizing the status of the species in terms of its resiliency, redundancy, and representation (Wolf *et al.* 2015, entire).

- **Resiliency** describes the ability of populations to withstand stochastic events (arising from random factors). We can measure resiliency based on metrics of population health;

for example, birth versus death rates and population size. Highly resilient populations are better able to withstand disturbances such as random fluctuations in birth rates (demographic stochasticity), variations in rainfall (environmental stochasticity), or the effects of anthropogenic activities.

- **Redundancy** describes the ability of a species to withstand catastrophic events. Measured by the number of populations, their resiliency, and their distribution (and connectivity), redundancy gauges the probability that the species has a margin of safety to withstand or can bounce back from catastrophic events (such as a rare destructive natural event or episode involving many populations).
- **Representation** describes the ability of a species to adapt to changing environmental conditions. Representation can be measured by the breadth of genetic or environmental diversity within and among populations and gauges the probability that a species is capable of adapting to environmental changes. The more representation, or diversity, a species has, the more it is capable of adapting to changes (natural or human caused) in its environment. In the absence of species-specific genetic and ecological diversity information, we evaluate representation based on the extent and variability of habitat characteristics across the geographical range.

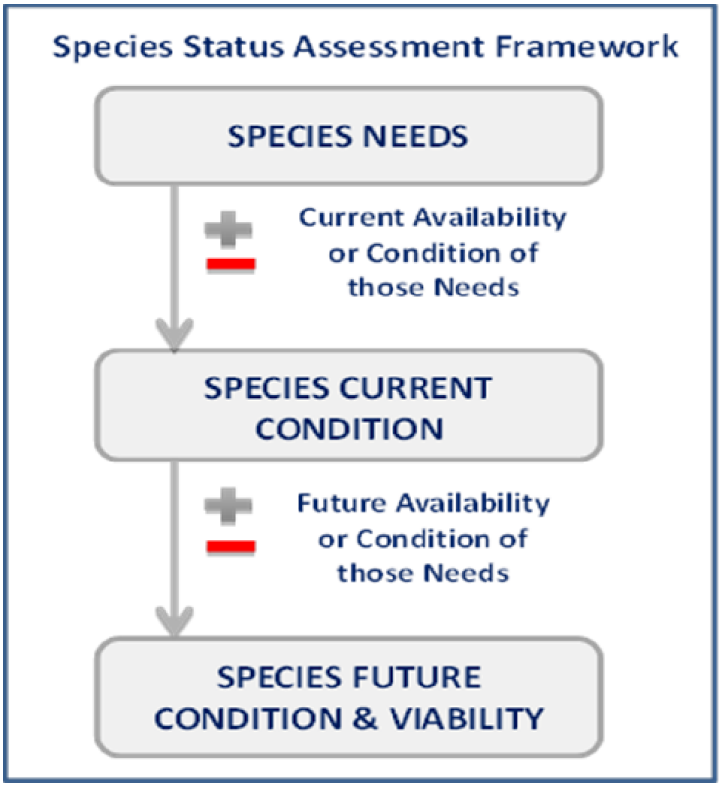


Figure 1.1. Species Status Assessment Framework

To evaluate the biological status of the dwarf-flowered heartleaf, both currently and into the future, we assessed a range of conditions to allow us to consider the species' resiliency, redundancy, and representation (together, the 3Rs). This SSA provides a thorough assessment of biology and natural history, and assesses demographic risks, stressors, and limiting factors in the context of determining the viability and risks of extinction for the species.

The format for this SSA includes: (1) Biology and Species Needs, (2) Current Conditions, (3) Influences on Viability, and (4) Future Conditions. This document is a compilation of the best available scientific and commercial information, and a description of past, present, and likely future risk factors to the dwarf-flowered heartleaf.

Chapter 2: SPECIES BIOLOGY

In this chapter, we provide basic biological information about the dwarf-flowered heartleaf, including its taxonomic history, species description, distribution, life history traits, and habitat characteristics. We then use this information to outline the resource needs within various life stages of dwarf-flowered heartleaf. Here we report those aspects of the life history of the dwarf-flowered heartleaf that are important to our analysis.

Taxonomy and species description

Dwarf-flowered heartleaf is a rare, low growing herbaceous plant in the birthwort family (Aristolochiaceae). The species was described by Blomquist (1957) in his revision of the North American members of the genus *Hexastylis*. The dwarf-flowered heartleaf has been recognized as part of the Virginica Group, and this group was further subdivided into three Subgroups: Virginica, Shuttleworthii, and Heterophylla (Blomquist 1957; Whittemore and Gaddy 1997). Three species have been recognized in the Heterophylla complex, *Hexastylis naniflora, H. heterophylla* and *H. minor*, and field biologist have generally recognized that considerable morphological overlap occurs (Murrell et al. 2007). One of the main concerns regarding this complex was the inability to distinguish between species without access to fresh flowers. Even with fresh flowers, Blomquist (1957) and Gaddy (1987) still recognized considerable overlap in flower morphology making species delineation difficult.

Murell et al. 2007, conducted a comparative genetic analysis using Inter Simple Sequence Repeats, and were unable to find banding patterns that could be used to separate *H. naniflora* from the other members within the complex. However, based on biogeographical, ecological, molecular, morphological, as well as micromorphological work, their results show that *H. naniflora* is a well-defined species.

Although there has been considerable disagreement on the generic distinctiveness of *Hexastylis* and *Asarum* (Barringer 1993 and Kelly 1997, 1998, 2001), a recent phylogeny estimate using chloroplast genes supports that *Hexastylis* is a monophyletic clade and therefore should be

recognized as a genus (Niedenberger 2010). Additionally, most North American publications recognize *Hexastylis* at the generic level (Flora of North America 1997, Weakley 2015).

The Service is not aware of any proposed changes in taxonomy that would affect the continued legal status of *H. naniflora* under the Act. However, within the range of *H. naniflora* there are populations which fall outside of the range of published values for key floral characteristics, overlapping with values described for *H. heterophylla* or *H. minor* (Figure 2.1; Weakley, 2010; Murrell et al. 2007; Gaddy 1987). These geographic areas of overlap in key characters have been the focus of recent genetic analyses (Murrell et al. 2007; Renninger, 2010; Murrell, 2015).

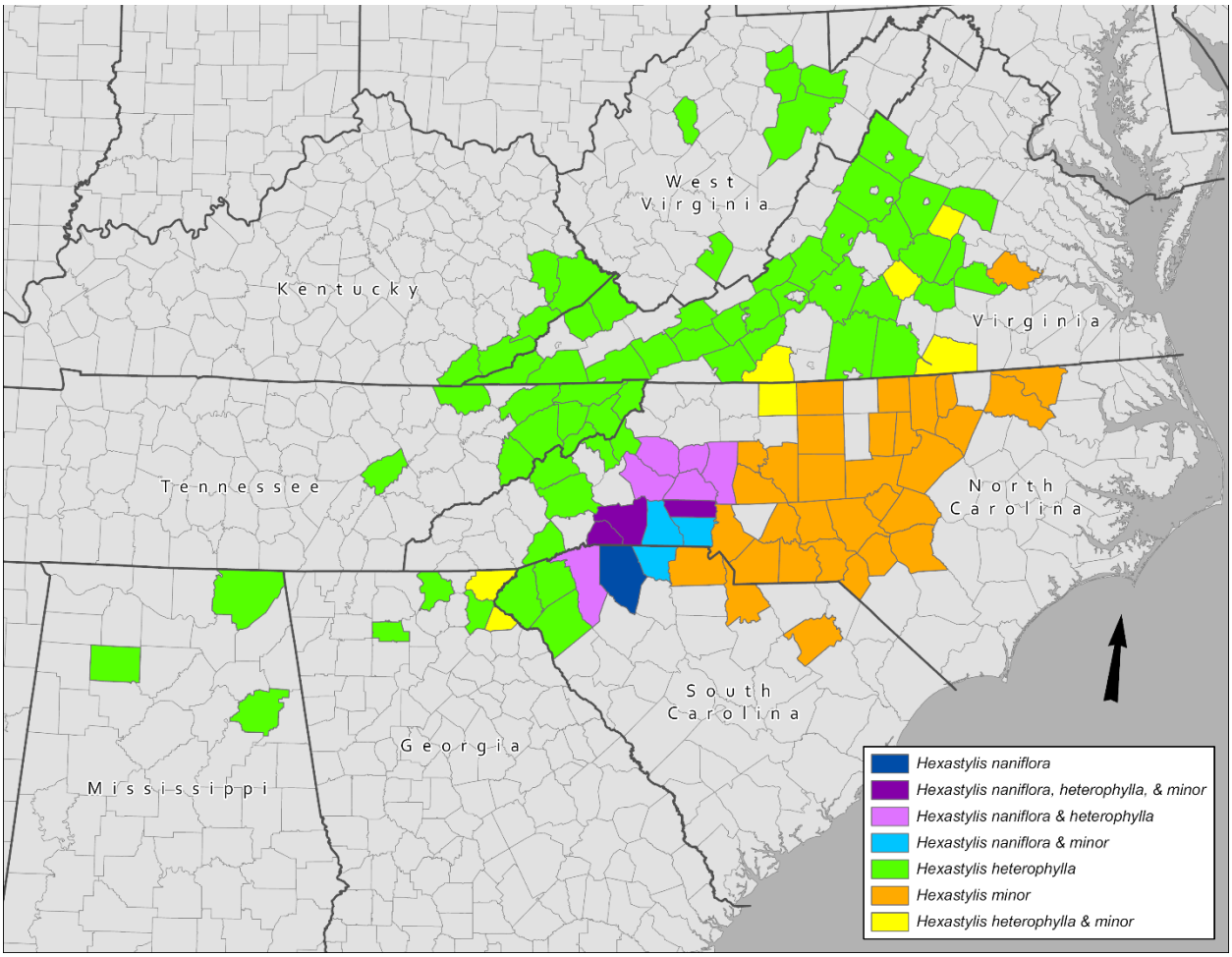


Figure 2.1. Distribution map showing county records for the three species in the *H. heterophylla* complex. Data was gathered from herbarium specimens, Element Occurrence Records (EORs) sheets and field studies. *Based on Murrell et al. 2007.*

The most outstanding characteristic of this species is the small flowers, which are one of the smallest of any species in North America (Blomquist 1957). The plant's heart shaped leaves are dark green in color, evergreen, and leathery, and are supported by long thin petioles from a subsurface rhizome. The shape of the leaf blades, their pattern of variegation, and the ridged reticulation inside the calyx-tube, place this species inside the Virginica group. It differs from all the other members of this group, aside from the small flowers, in having no flare in the calyx-tube. Maximum height rarely exceeds 15 centimeters (cm). The jug shaped flowers are usually beige to dark brown in color and appear from mid-March to early June. The flowers are small and inconspicuous and are found near the base of the petioles. The fruit matures from mid-May to early July (Blomquist 1957, Gaddy 1980, 1981). Characteristics that distinguish it from other *Hexastylis* species are found in floral structures and pollen characters (Gaddy 1987, Padgett 2004, Niedenberger 2010). *H. naniflora* has a smaller calyx tube orifice, which is typically 5mm or less (sometimes up to 7mm) and the ovary is half-inferior, rather than superior (Blomquist 1957, Gaddy 1987, Padgett 2004, HDR 2005). Pollen surface features have also been shown to be an effective character to identify *H. naniflora*, as it has a microporate surface and, unlike any other *Hexastylis* species, lacks gemmae entirely (Padgett 2004, Niedenberger 2010).

Distribution

Although dwarf-flowered heartleaf is restricted in range, it is not as rare as once thought (USFWS 2010, NCNHP 2016). When dwarf-flowered heartleaf was federally listed in 1989, the listing rule described 24 extant "populations" (and one extirpated population) distributed across eight counties in the upper Piedmont of North and South Carolina. Since 1989, the range has expanded to include four additional counties in North Carolina. In North Carolina, it is found in Alexander, Burke, Caldwell, Catawba, Cleveland, Gaston, Iredell, Lincoln, Polk, and Rutherford Counties. In South Carolina, it is in Cherokee, Greenville, and Spartanburg Counties. As of 2016, the distribution of this species consisted of 113 populations distributed across 13 counties in these two states (Figure 2.2).

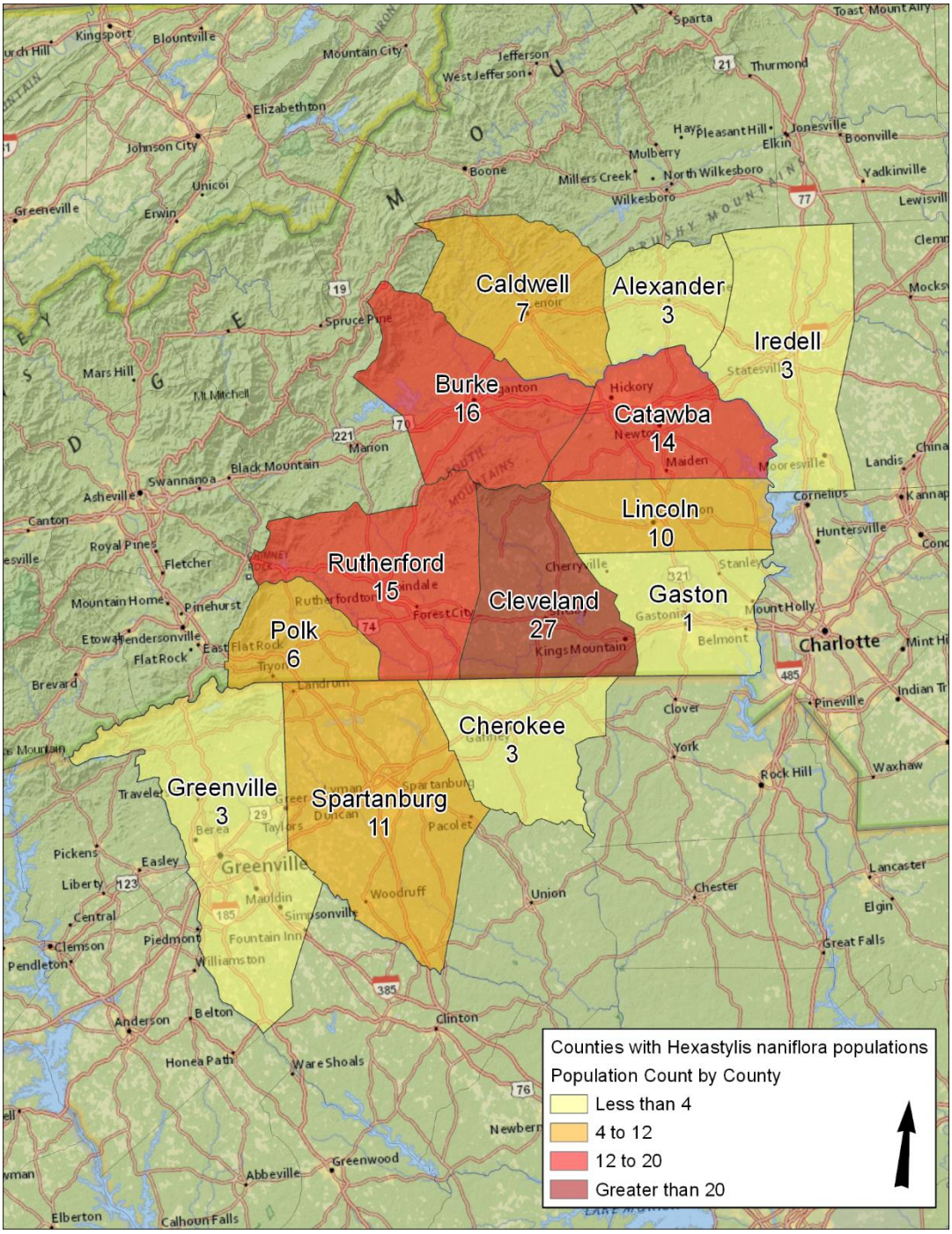


Figure 2.2. Current county distribution for dwarf-flowered heartleaf, with associated number of known populations within each county.

Many of those working with *Hexastylis naniflora* have used the terms “sub site”, “site”, “location”, “occurrence” (often, but not always, in reference to Natural Heritage Program Element Occurrence (EO) Records), “subpopulation” and “population” interchangeably. Others

have aggregated smaller sites into populations according to subjective criteria which have never been explicitly defined. This generates discrepancies among sources with respect to the abundance and distribution of the species, with the net result being that available data are usually not comparable from one source to the next. We describe how the numerous small, site-specific locations containing *H. naniflora* have been aggregated into proxies for 119 biological populations for purposes of this review, using mapping standards devised by NatureServe and its network of Natural Heritage Programs, in the Species Needs section of this report.

Life History

Demographics

The Service is aware of a single effort to collect demographic-level data (survivorship and recruitment of tagged individuals) for dwarf-flowered heartleaf. This effort was conducted during the 1990-1991 field seasons, within a portion of the Peters Creek population in Spartanburg County, SC (Newberry, 1993). This study demonstrated a 96.1% survival rate over these two consecutive seasons, with 50% of the mortality occurring in plants located at the highest position on the forested slope (away from the adjacent floodplain). Mortality was highest in small plants bearing fewer than four leaves. Plant size was variable, with the largest plant bearing 45 leaves and 33 flowers, and situated in the floodplain. In general, plants located in the floodplain were larger than plants located on adjacent slopes. The percentage of flowering plants averaged 70%, with the highest frequency of flowering occurring among plants situated in the floodplain (USFWS 2010).

Pollination and Dispersal

The pollination of *Hexastylis* has not been well studied but the genus was thought to be pollinated by insects including flies, wasps, and thrips (Otte 1977). Additionally, Lengyel et al. (2010) described how, within the family Aristolochiaeae, more than 50% of the plant lineage is myrmecochorous (seed dispersal by ants). This supports Gaddy's work (1986), which found three species within the Hexastylis Heterophylla subgroup (*H. heterophylla, H. naniflora, and H. minor*), which employ myrmecochory as a method for seed dispersal.

Ants appear to be a primary dispersal agent for the dwarf-flowered heartleaf (Gaddy 1986; Jones et al. 2014). All diaspores of *Hexastylis naniflora* presented to ants (*Aphaenogaster rudis*) were quickly removed (Gaddy, 1986). This is not to say that they are not occasionally, or even frequently, dispersed and/or pollinated by other means. Jones et al. (2014) suggests that the pollination mechanism is facultative, benefiting from more than one method of pollination/fertilization. Ants were the pollinators in a controlled experiment, and their data supports that when outside molesting forces/pollinators (biotic and abiotic) were limited by their caging procedure, the efficiency of pollination decreased by almost 50%, however, caged flowers did produce seeds, indicating pollination occurred via some alternative method.

Habitat

Dwarf-flowered heartleaf appears to have a restricted range due to its habitat requirements. The habitat where dwarf-flowered heartleaf exists is limited in size and scope due to a multitude of factors including soil type, moisture availability, and slope aspect (Wagner 2013). This unique combination of factors limits not only the range of dwarf-flowered heartleaf, but also the size of a given population. With the limited range and size in populations, questions arise regarding gene flow among populations. How much is occurring and how often does it occur? It is due, in part, to narrow habitat requirements that conservation measures have been implemented for the protection of the species. Any efforts made to protect this species must consider giving protection to the available habitat.

Dwarf-flowered heartleaf occurs on piedmont uplands on acidic sandy-loam soils that are very deep and moderately permeable (Gaddy 1981, 1987). Typical habitats for this species include mesic to dry bluffs, slopes, or ravines in deciduous forests that are frequently associated with *Kalmia latifolia* (Padgett 2004, Weakley 2015, USFWS 2015), or in moist soils adjacent to creeks, streamheads, or along lakes and rivers. Plants have been observed to grow larger and have more frequent flowering in floodplains along rivers, lakes, and streams (Newberry 1993). Wagner (2013) conducted a habitat suitability study to quantify the habitat requirements for dwarf-flowered heartleaf, which may be used for helping identify the species when not in flower

(relative to other *Hexastylis* species habitat preferences), find new populations, or identify suitable sites for transplants.

Soils

The species appears to be restricted to Pacolet sandy loam, Madison gravelly sandy loam, and Musella fine sandy loam soils (Gaddy 1981,1987). The species grows in acidic soils along bluffs and adjacent slopes, in boggy areas next to streams and creekheads, and along the slopes of nearby hillsides and ravines (Gaddy 1980, 1981). The plant is primarily found inhabiting north- to northwest-facing slopes, bluffs, and ravines in close proximity to creeks or streams. Within these areas exists the soil type required for *H. naniflora* to grow. It grows primarily on well-drained, sandy, acidic soils, and will not grow in heavy clay (Gaddy 1981).

The results of soil samples analyzed at the Clemson Soil Lab suggest that major differences in soil chemistry exist between the species in the *H. heterophylla* complex (Murrell et al. 2007). Statistical analysis of the soil samples showed that many of the basic elements were significantly different among the three species. Those significant differences occurred in Phosphorous (P), Potassium (K), Magnesium (Mg), Zinc (Zn), Manganese (Mn), (Na), Sodium, and Cation Exchange Capacity (CEC). Slightly significant differences were seen in Buffer pH (Bu pH), and Acidity.

Soil chemistry showed marked differences between the species in the complex (Murrell et al. 2007). The results indicated that soil chemistry is very different between *H. naniflora* and *H. minor* localities. The results also show that *H. heterophylla* and *H. naniflora* are found in soils where the chemistry is more similar, but still showed significant differences. It would appear that differentiation in soil types could be used as a proxy for species delineation. The soil analysis also indicates that soils must be considered when trying to select sites for relocation of imperiled populations of *H. naniflora*.

Thirteen population sites in North Carolina and South Carolina were examined using the Carolina Vegetation Survey (CVS) method to compare species richness between the three

species of the *Hexastylis heterophylla* complex (Murrell et al. 2007). The analysis did not show statistically significant differences among the three species in the *H. heterophylla* complex. However, *H. naniflora* appears to have an association with three oak species that is lacking in the other two species in the complex. There are a number of oak species (*Q. coccinea*, *Q. prinus* (*Q. montana*), and *Q. velutina*), that tend to co-occur with only *H. naniflora*, but are not present with the other two species in the complex. This may be the result of some microbial need or specific soil nutrient required for those species to occur in the same habitat.

Fire

There are little data on the response to fire by *Hexastylis naniflora*, however, prescribed burns have been conducted within the population at Cowpens National Battlefield in Cherokee County, SC. Preliminary data at this site and recent annual monitoring data of this population support the theory that moderate controlled burns do not negatively affect this population (Walker et al. 2009). Additionally, a dormant season wildfire in Caldwell County did not show evidence of negative impacts to a population in Caldwell County (USFWS 2010). Fire suppression could be a hazard to *H. naniflora* by allowing fire intolerant, nonnative and invasive plants to thrive, as well as the accumulation of thick duff or leaf litter that may shade low growing species (Wagner 2013).

Genetics

Analyses on ecology, morphology, soil chemistry, pollen, and molecular genetics have been evaluated for *Hexastylis naniflora* to determine the boundaries within the *Hexastylis heterophylla* complex, which consists of *H. heterophylla*, *H. minor*, and *H. naniflora* (Murrell 2015, Wagner 2013, Niedenburger 2010, USFWS 2010, Murrell et al. 2007, Padgett 2004). These analyses support the continued recognition of these taxa as well-defined, discrete species. Scanning electron microscopy (SEM) consistently distinguished *H. naniflora* from other members of the *H. heterophylla* complex based on pollen microscopy. Principal Components Analysis of floral characters and soil chemistry also consistently distinguished *H. naniflora* from *H. minor* and *H. heterophylla*. However, efforts to obtain consistently distinct banding patterns

using Inter Simple Sequence Repeats (ISSRs) were unsuccessful at distinguishing *H. naniflora* from other members of this group (Murrell et al., 2007). These results were based upon an extremely small sample size (n=10 *H. naniflora* individuals), and therefore warrant further investigation.

Field observations demonstrate that there are some populations of dwarf-flowered heartleaf with morphological characteristics that do not fit within the range of published values for key traits, overlapping with values for *H. heterophylla* or *H. minor* (Gaddy 1987, Murrell et al. 2007, USFWS 2010, Weakley 2015). These populations with overlap in key characteristics were the focus of a genetic analysis conducted at Appalachian State University (ASU) through funding provided by NCDOT (Murrell 2015). In some populations, floral characteristics are highly variable, which suggests the potential for hybridization or individuals with highly variable flower size and shape (Murrell 2015). Additionally, no vegetative characters were previously known to consistently distinguish *Hexastylis naniflora* from other close relatives. Given the difficulties with field identification of the species, particularly when not in flower, this study sought to develop a microsatellite library of molecular markers to resolve variation in populations of dwarf-flowered heartleaf and apply the markers to populations with highly variable characters, as identified by NCDOT biologists. The morphological and micromorphological information from those variable populations were compared to molecular results with morphological, micromophological, and distributional data to determine genetic structure, biological boundaries, and placement of putative hybrids or intermediate populations of *H. naniflora* (Murrell 2015).

The preliminary findings of this study suggest that populations in the southern range of dwarf-flowered heartleaf exhibit a more uniform genetic pattern, with some possible hybridization with *H. minor*. Populations in the northern part of the range appear to have hybridized with both *H. heterophylla* and *H. minor*, although there are still individuals with "pure" *H. naniflora* genotypes in the northern range (Murrell 2015). It is critical to note that although these data provide anecdotal evidence of hybridization with the *Hexastylis heterophylla* group, intraspecific variation may be caused by forces other than hybridization, such as convergent morphological evolution (Dobzhansky 1937), or the species is in the process of speciation and this study shows a case of incomplete speciation (Murrell 2015), and/or other environmental factors are at play

(Wagner 2013). On May 11, 2016, a meeting was held with USFWS, NCNHP, NCDOT, and ASU to discuss the status of *H. naniflora* and the current work being conducted among the agencies (Amoroso 2016). Based on discussions during this meeting, the results of this study reported by ASU to NCDOT in 2015 are preliminary. Dr. Matt Estep (ASU) provided additional preliminary results to NCNHP in May 2016, showing which populations were sampled, sample size, and percent of samples that show evidence of hybridization, and hybridizing with which species. ASU continues to work towards a more definitive explanation of the variation in the *H. heterophylla* complex (Murrell 2015, Amoroso 2016).

CHAPTER 3: SPECIES NEEDS

For the purpose of this report, we define viability as the ability of the species to sustain populations in the wild over time. Species with greater numbers (redundancy) of healthy populations (resiliency), encompassing a broad array of ecological and genetic diversity in a spatial arrangement that maintains adequate gene flow (representation), are more likely to be viable. Using the Species Status Assessment framework, we describe the species' viability by characterizing the status of the species in terms of its resiliency, redundancy, and representation.

Delineating Populations

As stated in the USFWS five-year review, many of those working with dwarf-flowered heartleaf have used the terms "sub site," "site," "location," "occurrence" (often, but not always, in reference to Natural Heritage Program Element Occurrence Records), and "population" interchangeably, while others have aggregated sites into populations according to subjective criteria which have never been explicitly defined. This has generated considerable discrepancies among sources with respect to the number of known populations within a given area (or across the species' range), to the extent that numbers are not comparable from one source to the next. The tendency, in the past, to treat each location as a separate population also artificially inflated the actual number of populations known.

The Natural Heritage Program collects information on occurrences of rare plants, animals, natural communities, and animal assemblages. Collectively, these are referred to as "elements of natural diversity" or simply as "elements." Locations of these elements are referred to as "element occurrences" (EO records). In recent years, NatureServe and its member Natural Heritage Programs have devised mapping standards to balance the need for fine-scale, highly site-specific EO records (required for monitoring and management) with the need to aggregate these records in meaningful units of conservation interest that may approximate biological populations (NatureServe 2002). Since USFWS does not maintain its own database of known locations of *Hexastylis naniflora*, it regards the NHP databases as the best repository for this information (USFWS 2010).

We delineate populations for the purposes of this SSA according to the NatureServe (2002) convention. Separation distances are a key component to delineating populations from EO records. For the dwarf-flowered heartleaf, we used the EO Data Standard which provides a Default Separation Distance of 1 km (~0.62 miles) for plant and animal elements that lack EO specifications, noting that situations involving dispersal barriers could involve even shorter distances. While gene flow declines over distance at different rates for different elements, the minimum default EO separation distance of 1 km has been accepted by the Network as the most suitable round-number metric-system approximation broadly applicable to many (but not all) situations. This results in several dwarf-flowered heartleaf populations being stand-alone EOs, as well as many populations being aggregates of several EOs.

Population Resiliency

For the dwarf-flowered heartleaf to maintain viability, its populations or some portion thereof must be resilient. Stochastic factors that have the potential to affect dwarf-flowered heartleaf include impacts to its habitat, particularly human development pressures, but also climate change and presence of invasive species. Other factors that influence the resiliency of dwarf-flowered heartleaf populations include abundance within populations, and habitat factors such as elevation, slope, aspect, and soil type. Influencing those factors are elements of dwarf-flowered heartleaf ecology that determine whether populations can grow to maximize habitat occupancy,

thereby increasing resiliency of populations. These factors and habitat elements are discussed below (Figure 3.1).

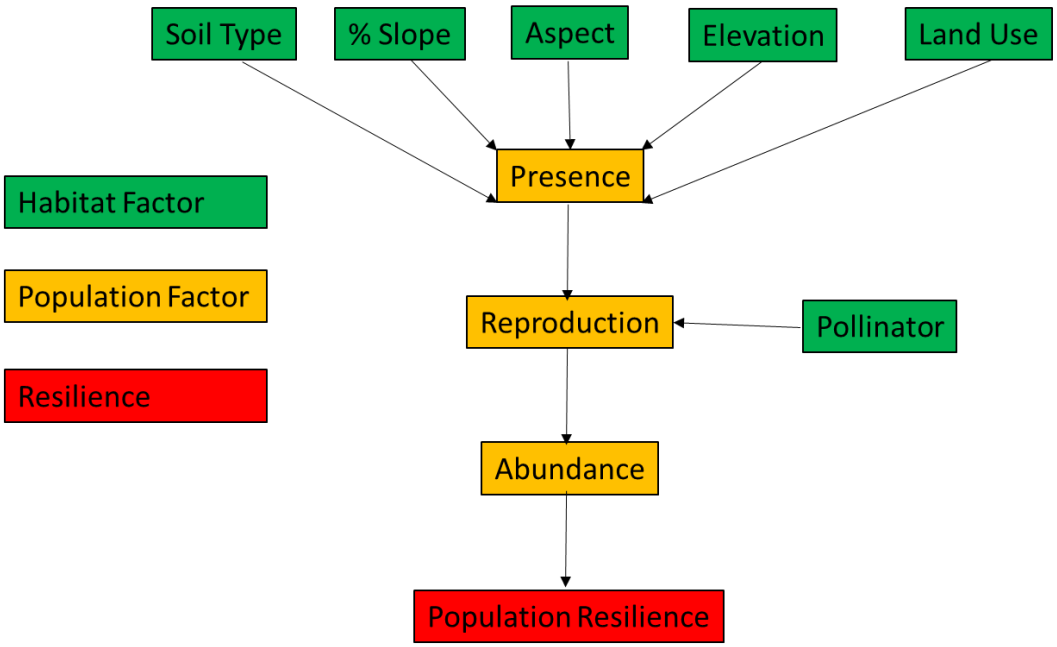


Figure 3.1. Conceptual diagram describing population and habitat factors influencing population resilience for dwarf-flowered heartleaf.

Habitat Factors: Slope, Aspect, Elevation, Soil, and Forest Type

A previous habitat suitability study attempted to quantify the habitat requirements for dwarf-flowered heartleaf (Wagner 2013). With this model in mind, and the input of species experts as to important habitat factors for the species, we used updated habitat data, as well as inclusion of updated EOs, to create a new habitat model to identify potential habitat throughout the species range. All source datasets and variables created are described in Appendix 3.

Source Data and Model Variables

Fifty-three, 10-digit hydrologic units (HUC) comprise the analysis extent (Figure 3.2). In North Carolina, it includes all 10-digit HUC that fall within the boundaries of 8-digit HUC with known occurrence of *Hexastylis naniflora*. In South Carolina, we also included all 10-digit HUC that fell within the boundaries of 8-digit HUC with known occurrence of *Hexastylis naniflora*, but

excluded the southern portions of the HUC-8 areas due to the boundaries being exceedingly large and far away from any known occurrences.

Hexastylis naniflora element occurrence data was obtained from the North Carolina Natural Heritage Program and the South Carolina Heritage Trust Program. Current populations of *Hexastylis naniflora* were identified by reviewing the last observed data in the database and excluding all populations that have not been observed since 2005 to remain consistent in our approach of assessing resiliency described previously. To represent these current population areas in Maxent, a raster cell center was retained for every 30 x 30 meter pixel that was situated within the current element occurrence data polygons.

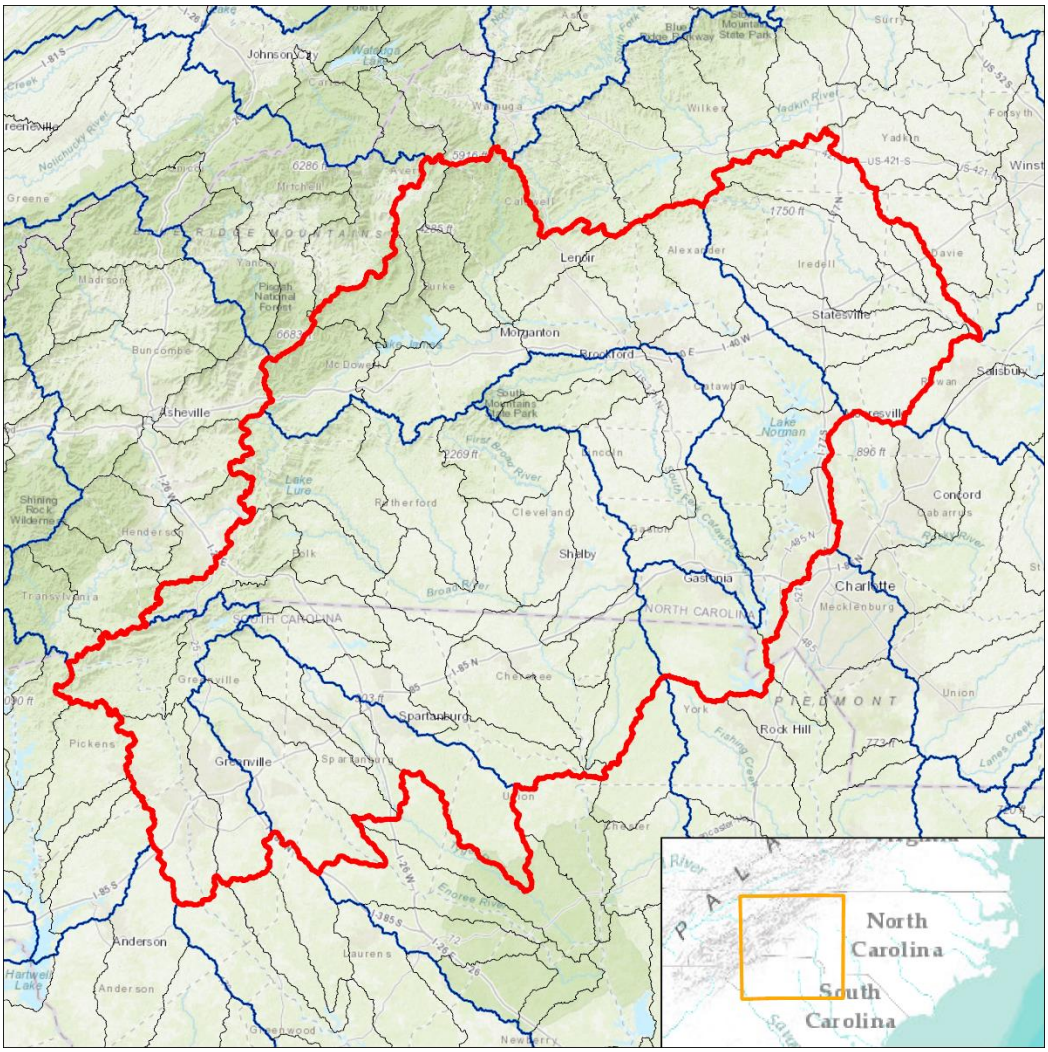


Figure 3.2. Analysis extent of the habitat model for *Hexastylis naniflora.* Red line indicates Maxent analysis extent, blue lines are 8-digit HUC boundaries, black lines are 10-digit HUC

boundaries. The orange line in the inset map indicates where the analysis extent is situated in North and South Carolina

Model Development

We used Maxent software (version 3.4.1) for species habitat modeling (Philips et al., 2018). An initial single model Maxent run was done to determine which variables could be excluded due to limited percent contribution to the model. Any variable that contributed less than 1% to the single model run results was excluded in the final model. The following variables were excluded: landcover diversity, canopy height, SSURGO drainage class, SSURGO hydrologic group, aspect 9-class, aspect 5-class, slope, solar radiation, and maximum annual temperature. It is interesting to note that a previous habitat modelling effort (Wagner 2013) included aspect and slope, whereas the Maxent model excluded these variables. This does not mean these variables are not important components of dwarf-flowered heartleaf habitat, but rather these variables did not significantly improve the model. Also, landform data was included, and perhaps landform, which includes components of aspect and slope combined is a more meaningful variable than aspect or slope independently.

For the final model, a 10-run replicate Maxent model was created using cross-validation. For replicate models, the occurrence data is randomly split into a number of equal-sized groups called “folds”, and separate models are created leaving out each fold in turn. The individual model runs are then averaged together to derive the final model.

Results

Figure 3.3 shows the model output. The minimum cutoff value (to determine if an area is considered potential habitat for a species) of 0.39 was determined by using the average 10th percentile training presence. The 10th percentile training presence uses the suitability threshold associated with the presence record that occurs at the 10th percentile of presence records (Phillips 2018). This value excludes some of the outlier population areas in the Maxent predictions to focus on the typical habitat conditions for this species. The total area ranked greater than 0.39 in the Maxent model was just 6.00% of the total analysis area (Table 3.1).

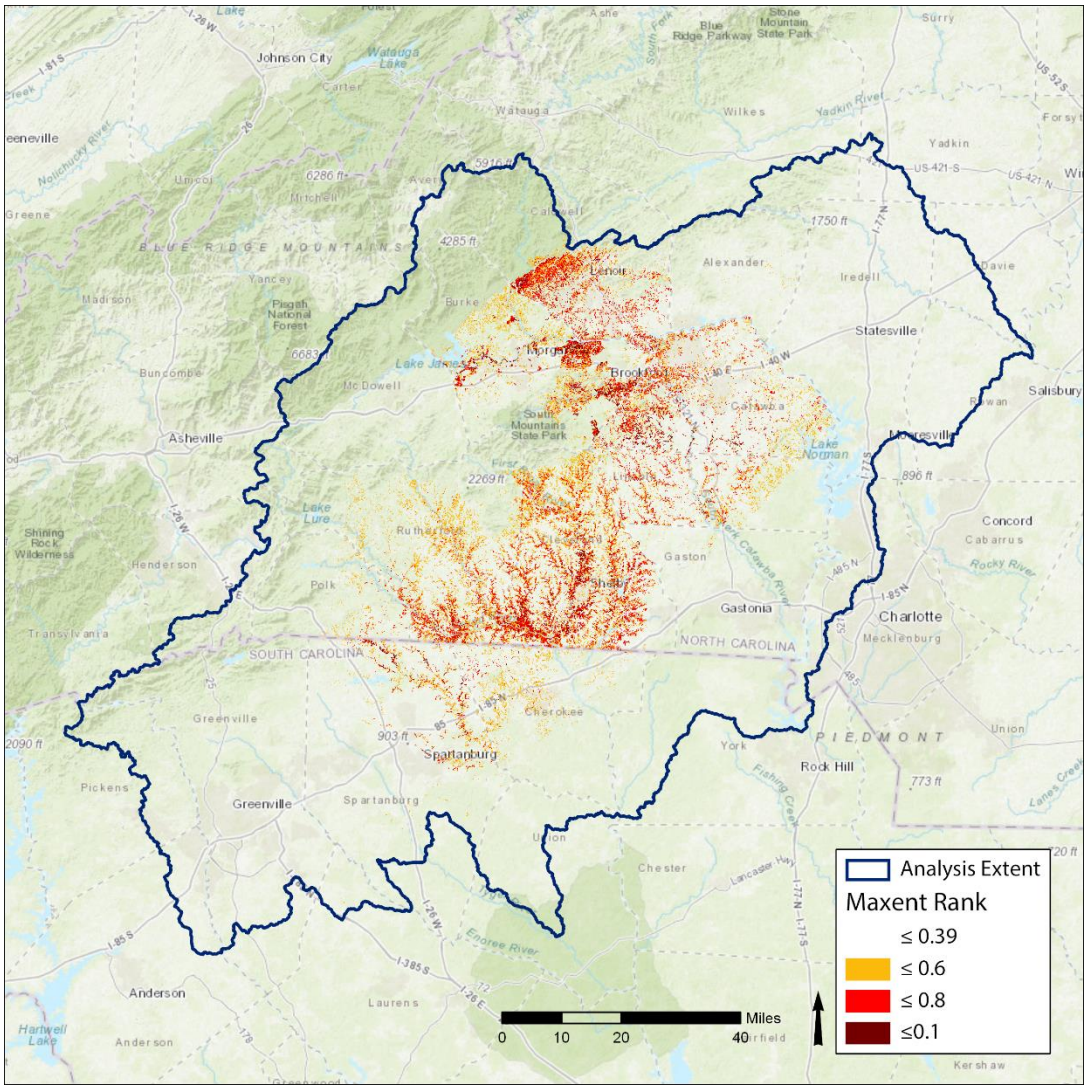


Figure 3.3. Maxent model output map

Table 3.1-Area estimates of the Maxent model

Maxent Score	Acres	Square Miles	Percent of Total
0.39 and greater	302,834.13	473.18	6.02%
0.6 and greater	128,273.52	200.43	2.55%
0.8 and greater	22,115.97	34.56	0.44%

The average area-under-curve (AUC) score for the replicate Maxent model is 0.86. The AUC is calculated from the receiver operating characteristic (ROC) plot. This value has a range of 0 – 1 and may be interpreted as a single test statistic that assesses model performance, indicating the

ability of the model to correctly classify the occurrence data used. The model performed well in its predictions, with a mean AUC of 0.86 (AUC value of 0.5 is no better than random; AUC<0.5 is worse than random; AUC>0.5 is greater predictive power than random; Baldwin 2009).

The Maxent output supplies estimates of the relative contributions of the environmental variables to the Maxent model (Table 3.2). SSURGO map unit key) is the top contributing variable. One hundred and thirty-five individual soil types are present within the polygon boundaries of the *Hexastylis naniflora* element occurrences. Many of these individual soil types are part of soil complexes and are separated by things such as percent slope, erosion, how stony/rocky, and amount of clay. The most common individual soil type was Meadowfield-Rhodhiss complex, 25 to 60 percent slopes, very stony (14.1% of total). However, collectively the Meadowfield soils only comprised 14.3% of all soils). The individual Pacolet soil types were very common and collectively comprise 36% of all soil types present. Woolwine, Rion, and Fairview soils were also collectively common, comprising 10.4%, 9.7%, and 8.8% of all soils present respectively.

Table 3.2. Percent contribution of the environmental variables

Environmental Variable	Percent Contribution
SSURGO map unit key	23.5%
Minimum Annual Temperature	17.8%
Average Annual Precipitation	15.7%
Landcover	12.9%
Landcover Majority	12.0%
Landcover Hexastylis Grouping	5.4%
Geomorphons	4.9%
Elevation	4.6%
Canopy Cover	3.2%

The minimum annual average temperature range in the analysis extent is 39 – 51 degrees Fahrenheit. The majority of the *Hexastylis naniflora* element occurrences (89%) are found at the 47 and 48 degrees. The average annual precipitation range in the analysis extent is 42 – 81

inches per year. The majority of the *Hexastylis naniflora* element occurrences (82%) are found in the 47 – 49 inches per year range.

Piedmont forested landcover habitats dominate the land area of the element occurrences. Southern Piedmont Dry Oak-Pine Forest – Hardwood Modifier (53%), Southern Piedmont Mesic Forest (9%), Southern Piedmont Dry Oak-Pine Forest (5.2%), Southern Piedmont Small Floodplain and Riparian Forest (4.4%), and collectively comprise 71% of the element occurrences area. Evergreen Plantation or Managed Pine (9%), Harvested Forest (7.2%), Developed, Open Space (5%), Pasture/Hay (2.1%) collectively comprise 22% of the total element occurrence area. The remaining 6 percent of element occurrence area is comprised of a mix of 14 other natural and disturbed landcover classes, but each at small percentages.
The landcover majority classification scheme reduces the total number of landcover classes present in the analysis extent from 23 to 11. Southern Piedmont Dry Oak-Pine Forest – Hardwood Modifier is still the dominant landcover class (58%). However disturbed categories are increased in area (sum total of 35%). Evergreen plantation or managed pine (12%) and Pasture/Hay (12%) are the only other categories that have at least 10% or greater area. The increase in disturbed landcover area representation in the landcover majority layer suggests that many *Hexastylis naniflora* population areas are situated in areas impacted by disturbed landcover. This is likely due to urban encroachment and increasing fragmentation of habitats.
The landcover *Hexastylis naniflora* grouping reveals the amount of disturbance present in *Hexastylis naniflora* population areas. Landcover classes grouped as disturbed comprises 27% of the total area. Mixed forest (deciduous and evergreen) comprises 58%, pasture/hay 12%, and hardwood forest 2%. Open water, evergreen and barren landcover groupings are all at less than 1% each.

Geomorphons revealed that the majority of *Hexastylis naniflora* element occurrence areas are situated in concave landforms. Geomorphon categories hollow (13%), valley (46%), and depression (10%) collectively comprise 69% of all *Hexastylis naniflora* population areas. Flat landforms comprise 15.5% of the area and convex landforms the remaining 15.5%.
Within the analysis extent, the range of elevation present is 335 – 5,265 feet. For *Hexastylis naniflora*, the prime elevation range is from 666 – 908 feet (53% of total element occurrence

area). A lesser elevation range is present from 935 – 1,184 (37% of total element occurrence area).

Canopy cover for the *Hexastylis naniflora* populations are dominated by Tree Cover 70-80% (20.2%) and Tree Cover 80-90% (63.9%). The rest of the canopy cover categories are 2% or less.

We performed a Kruskal-Wallis 1-way non-parametric Analysis of Variance (ANOVA) to investigate the relationship between Maxent scores and current resilience of populations (Table 3.3). There are significant differences in the average Maxent scores between the four resilience categories ($p = 0.04$) and the mean Maxent score increases as population resilience increases from low to very high. The model gives us some predictive ability regarding habitat suitability where higher Maxent scores, on average, result in higher population resilience.

Table 3.3 Results of the Kruskal-Wallis 1-way non-parametric ANOVA investigating relationships between Maxent scores and current resilience groups for dwarf-flowered heartleaf.

Groups	*Count*	*Mean Rank*
low	13	30.7
moderate	25	30.7
high	5	42.8
very high	28	45.7

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	4375.7	4	1093.92	2.65	0.0404
Within Groups	28036.3	68	412.30		
Total	32412.0	72			

Reproduction and Presence of Pollinators

The pollination of *Hexastylis* has not been well studied but the genus is thought to be pollinated by insects including flies, wasps, and thrips (Otte 1977). Additionally, Lengyel et al. (2010) described how, within the family Aristolochiaeae, more than 50% of the plant lineage is myrmecochorous (seed dispersal via ants). This supports Gaddy's work (1986), which found three species within the Hexastylis Heterophylla subgroup (*H. heterophylla, H. naniflora, and H. minor*), which employ myrmecochory as a method for seed dispersal.

Because the flower for this species is oftentimes partially or completely covered with soil and leaf litter, possibly inhibiting pollinator activity (Gonzalez 1972), there is still uncertainty in the pollination mechanism for dwarf-flowered heartleaf. Otte (1977) suggests that a variety of possible pollinators reside in this leaf litter, however, the calyx opening is considered to be far too small for efficient pollinating (Gaddy 1981). There are, however, invertebrates within this proposed size limit that could theoretically act as pollinators. It is possible that the species employs self-pollination, with or without a vector, or that cross-pollination occurs by a number of invertebrates. Jones et al. (2014) investigated pollination of dwarf-flowered heartleaf under a manipulative experimental design, and found that while insects may play a significant role in pollination, even without them, flowers managed to produce a partial seed set. However, two points need to be considered here. First, although flowers managed to produce seeds in the absence of insect pollinators, the efficiency of pollination decreased by almost 50%. Also, even if successful pollination occurs in the absence of insect vectors, the dispersal of plants amongst populations would be limited, and could result in decreased resilience due to genetic concerns such as limited gene flow and issues associated with potential inbreeding depression.

Abundance

The influence of stochastic variation in demographic (reproductive and mortality) rates is much higher for small populations than large ones. Stochastic variation in demographic rates causes small populations to fluctuate randomly in size. In general, the smaller the population, the greater the probability that fluctuations will lead to extinction. There are also genetic concerns with

small populations, including reduced availability of compatible mates, genetic drift, and inbreeding depression. Small populations of dwarf-flowered heartleaf have low resilience, leaving them particularly vulnerable to stochastic events.

As of 2016, the combined databases of the NCNHP and SCDNR contain 239 Element Occurrence Records (EORs) for *H. naniflora* (NCNHP 2016, SCDNR 2016). These EORs depict roughly 113 locations which are sufficiently geographically distinct to be regarded as proxies for populations of the species (See *Delineating Populations*). Thus, the total number of populations has increased more than four-fold (from 24 to 113) since the species was listed in 1989.

At this time, the largest known populations have been monitored by NCNHP and NCDOT. The estimates for entire populations are based on a consistent monitoring methodology developed by NCDOT, USFWS, and NCNHP with monitoring plots representing roughly 10% of a population. Populations were delineated to get a more accurate boundary and size of the area occupied. All rosettes are counted annually in each monitoring plot to estimate an extrapolated population size, based on the number and density in the plots. As a result of these efforts, better estimates of population sizes for the largest known populations are available, compared to when the last five-year review was completed in 2010 (Robinson and Padgett 2016).

The 113 EORs have been estimated to contain anywhere from a single rosette to over 100,000 rosettes. Appendix 1 was created by NCNHP (2016) to replicate the same format and population data as Table B2 of the most recent USFWS five-year review of *H. naniflora* (USFWS 2010), for comparison of changes since 2010, and summarizes the largest occurrences of *H. naniflora*, with the size of the population based on the number of rosettes it was last estimated to contain. The number of populations estimated to contain over 1,000 rosettes is 26. This is approximately 23% of the total known populations and many of these populations contain well over 1,000 individuals.

There are, however, 13 populations (12% of all known) that are simply known to be extant, with no available estimate of population size (NCNHP 2016, SCDNR 2016). If the most recent population estimates for each EOR are compiled across years of observation, the 113 populations

could conservatively be estimated to contain a collective total of more than 300,000 rosettes (NCNHP 2016, SCDNR 2016).

Population Trends

Although abundance is critical in assessing the resilience of dwarf-flowered heartleaf, trends in population growth can also be informative. Long-term growth trends are typically defined as the degree of change in population size over 200 years, whereas short-term growth is typically measured as that degree of change over a 10 year period. We lack a robust data set to assess trends at either of these time scales. However, from 2012-2016, NCNHP conducted systematic annual surveys of thirteen of the largest populations across the range.

Based on the results of the five-year monitoring efforts completed in 2016, nine out of thirteen populations remain stable during the five years of data collection (Robinson and Padgett 2016). The largest known population, Broad River: Henson's Creek, Brice, & Sandy Mush Outcrop in Rutherford County, NC, is estimated to have over 100,000 rosettes (Robinson and Padgett 2016). This large population consists of many scattered subpopulations on private property; two of the subpopulations are protected as a Registered Heritage Area, although Registry is a non-binding agreement with landowners that can be cancelled at any time (NCNHP 2018).

Two of the thirteen populations increased in numbers from 2012-2016: Cliffside Steam Station and Broad River: Floyds Creek, Long Branch. The Cliffside Steam Station is protected with a voluntary agreement with Duke Energy and was estimated to contain over 39,000 rosettes in 2016. The Broad River: Floyds Creek, Long Branch population is not at all protected, but was last estimated to consist of over 12,000 individuals in 2016 (Robinson and Padgett 2016).

Based on the results of recent surveys and a review of all known populations of *Hexastylis naniflora*, the overall trend over approximately 30 years is estimated to be declining 10-30%. This is estimated by a combination of documented declines of some populations, while many others appear to be remaining relatively stable, and some have increased.

Chapter 4: CURRENT CONDITIONS

Below we assess current resilience, representation, and redundancy as they relate to population and habitat factors known to be important for species viability. Based off of recent reports (Robinson and Padgett 2016; Robinson 2016), the species consists of 119 populations distributed across 12 counties in North Carolina and South Carolina. Populations are composed of both multiple EOs and stand-alone EO records. Recent genetic research discussed in Chapter 2, suggests that dwarf-flowered heartleaf, as originally described, is found in the southern portion of its presumed range based on current EO locations, and the northern portion could be a currently undescribed species (Figure 4.1; Estep pers. Comm. 2018). The genetic analysis to support this is complete, but a review of the morphology is ongoing and a new species has not yet been described (Estep pers. Comm. 2018). For the purpose of this SSA, we assume all EO detections are *H. naniflora*, and represent the best currently available scientific data.

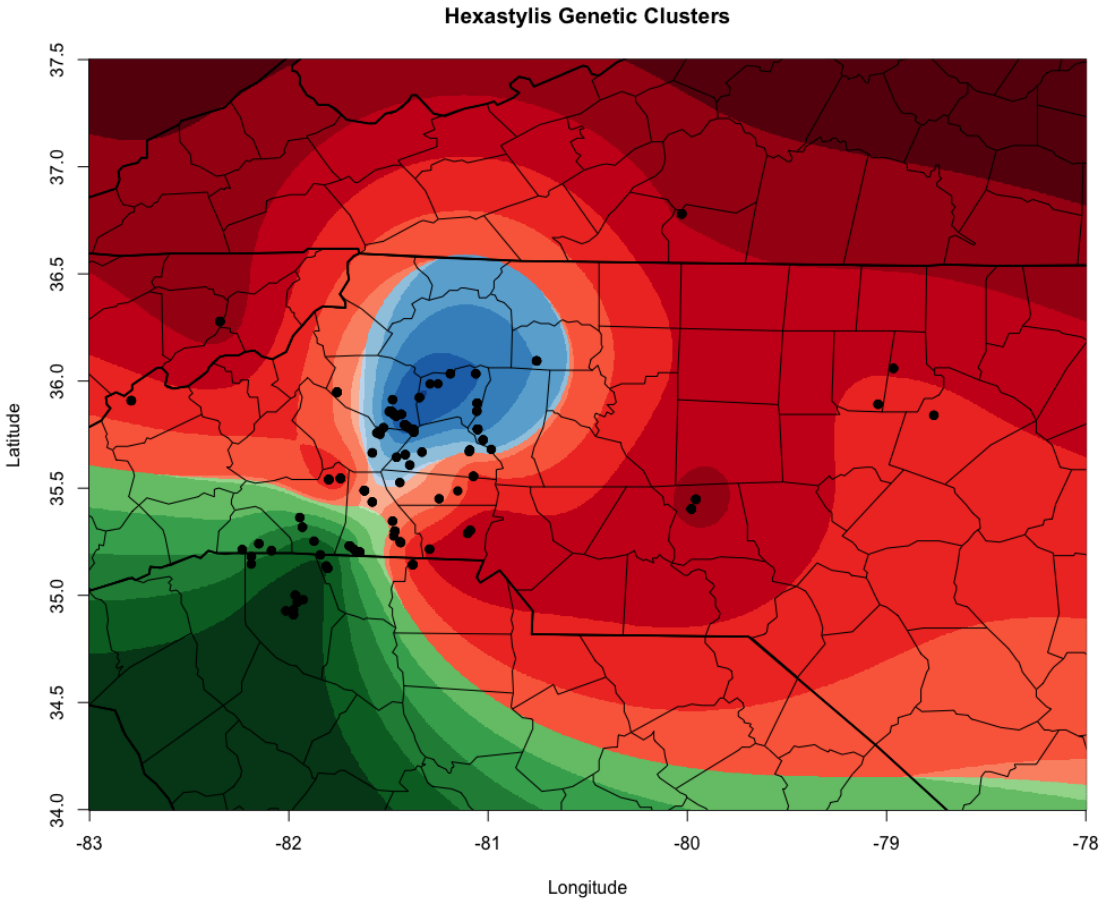


Figure 4.1. Recent genetic analyses detailing clustering of the genus Hexastylis. Black dots represent GIS locations of individual plants included in the genetic analysis. Green areas represent "true" *H. naniflora*; Blue represents a possible new species; Red represents other species in the genus (*H. minor, H. heterophylla*, etc.).

Current Population Resilience

Categorizing Resilience

For the purposes of this SSA, we use population size as the main driver of population resilience. The unit of measurement for population size in this species is a "clump" (rosette). As discussed previously, populations in North Carolina were delineated by NCNHP, whereas the Service defined populations in South Carolina. These delineations were based off of NatureServe criteria such as EO separation distance and intervening landscape matrix. EO data included a wide range of years since the species was last observed at a given location (1964-2017), so although recent reports suggest the species consists of 113 populations, some of that data is fairly outdated. For the purposes of this SSA, we only used EOs that were observed since 2005. We did this for several reasons. First, we did not want to go back too far and assume a population was still present. Second, we wanted to be consistent in what we considered "current" for both categorizing resilience and use in the habitat model (discussed later). Also, experts concurred that records as old as 12 years are still likely to persist. Finally, there was a natural break in the data at the year 2005, coinciding with the year the last five-year review was initiated, where the number of EOs dropped off significantly in the years 2004 and earlier. It is important to note that many of the populations that we excluded from our analysis may still persist on the landscape. In fact, many EOs for this species have persisted for decades, despite not having intervening surveys to confirm their persistence.

Based on the criteria (excluding EOs prior to 2005), there are currently 78 populations distributed across the range of dwarf-flowered heartleaf, although this may be an underestimate as discussed above.

To determine overall resilience for populations, we used EO viability ranks and expert opinion to bin population size classes into corresponding resilience categories. EO viability ranks for the species include excellent, good, fair, poor, extant, historical, and failed to find. The primary factor in determining these ranks is EO size (as quantified by number of clumps). Condition of habitat (vegetation community and structure) and landscape context (extent of suitable habitat and physical factors) are also incorporated secondarily. Appendix 2 shows the NCNHP EO rank specifications for dwarf-flowered heartleaf. The EO rank specifications suggest good-excellent viability for populations consisting of at least 500 individuals, given there is sufficient high quality habitat; fair viability for populations consisting of 100-500 individuals, depending on habitat conditions; poor viability for populations consisting of less than 100 individuals. Recent reports (Robinson 2016; Robinson and Padgett 2016) focus monitoring studies on populations with greater than 1,000 individuals, populations that are assumed to be very viable. Because we do not have habitat level information for every population we assessed, we synthesized all of the above population size information and created four resilience categories as follows:

- Very high—populations with >1,000 individuals; very high probability of persistence for 20-30 years at or above the current population size.
- High—populations with 500-1,000 individuals; moderate-high probability of persistence for 20-30 years at or above the current population size.
- Moderate—populations with 100-500 individuals; low probability of persistence for 20-30 years at or above the current population size.
- Low—populations with <100 individuals; low probability of persistence for 20-30 years at or above the current population size, and moderate-high probability of extirpation.

Occupancy and Abundance

There are 78 populations of dwarf-flowered heartleaf that have been observed since 2005 (Table 4.1), and resilience of these populations is as follows: 28 (very high); 5 (high); 26 (moderate); 19 (low). Table 4.2 shows the contribution of each resilience category as follows: 36% (very high); 7% (high); 34% (moderate); 23% (low). When looking at cumulative percentages of resilience, it is interesting to note that 77% of all of the populations are classified as moderate to very high resilience (Table 4.2).

Table 4.1. Current populations of dwarf-flowered heartleaf and associated resilience across the species range. Abundance and last observation date based on Natural Heritage Program data (2018).

Site Name	State	County	Last Observed	Total plants	Resilience
Glade Creek, Alex County	NC	Alexander	2017	>1000	very high
Catawba River: Hoyle Crk-Micol Crk	NC	Burke	2013	>1000	very high
Island Creek Heath Bluff	NC	Burke	2016	>1000	very high
Gunpowder Creek: South of Hudson	NC	Caldwell	2012	>1000	very high
Peaked Top Rare Plant Site/Foothills Landfill	NC	Caldwell	2014	>1000	very high
Jacob Fork West Corridor	NC	Catawba	2012	>1000	very high
Murrays Mill/Upper Balls Creek NA	NC	Catawba	2013	>1000	very high
NCDOT TIP: R-2824	NC	Catawba	2015	>1000	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	NC	Catawba	2013	>1000	very high
Cowpens NBF - Site 1	SC	Cherokee	2016	>1000	very high
Cliffside Steam Station	NC	Cleveland/Rutherford	2016	>1000	very high
Broad River/Sandy Run NA	NC	Cleveland	2012	>1000	very high
Broad River: Brushy Creek	NC	Cleveland	2016	>1000	very high
Buffalo Creek: Kings Mountain Res	NC	Cleveland	2016	>1000	very high
Buffalo Creek: Tributaries N and S of SR 2047	NC	Cleveland	2012	>1000	very high
Rhyne Conservation Preserve	NC	Lincoln	2016	>1000	very high
Mill Creek Forest and Seep	NC	Polk	2016	>1000	very high
New Hope Springhead Swamp	NC	Polk	2016	>1000	very high
Big Horse Creek Rare Plant Site	NC	Rutherford	2015	>1000	very high
Broad River: Floyds Creek	NC	Rutherford	2016	>1000	very high
Davenport Road/Mountain View Rare Plant Site	NC	Rutherford	2016	>1000	very high
Facebook Site	NC	Rutherford	2016	>1000	very high
Floyds Creek Tributray Rare Plant Site	NC	Rutherford	2012	>1000	very high
New Bethel Rare Plant Site	NC	Rutherford	2015	>1000	very high
Richardson Creek trib above Toms Lake	NC	Rutherford	2016	>1000	very high
DNR Peters Creek Heritage Preserve	SC	Spartanburg	2016	>1000	very high
Taylor Blalock Res	SC	Spartanburg	2016	>1000	very high
Leepers Creek Heartleaf Site	NC	Lincoln	2006	>1000	very high
Little Gunpowder Creek Rare Plant Site 1	NC	Caldwell	2015	500-1000	high
Little Gunpowder Creek Rare Plant Site 2	NC	Caldwell	2015	500-1000	high
Northern Catawba County	NC	Catawba	2017	500-1000	high

Site Name	State	County	Last Observed	Total plants	Resilience
Rock Barn Solar Farm	NC	Catawba	2010-2011	500-1000	high
Buffalo Creek Rare Plant Site	NC	Cleveland	2012	500-1000	high
Third Creek Rare Plant Site	NC	Alexander	2010	100-500	moderate
Hickory Area	NC	Burke/Catawba/Caldwell	2016	100-500	moderate
Burke County - Drowning Creek UT	NC	Burke	2017	100-500	moderate
Simms Hill/Little River Uplands	NC	Burke	2015	100-500	moderate
Smith Cliff/Henry Fork River	NC	Burke	2015	100-500	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	NC	Catawba	2016	100-500	moderate
NCDOT TIP R-2824	NC	Catawba	2015	100-500	moderate
South Fork Catawba River, Henry Fork	NC	Catawba	2007	100-500	moderate
Broad River/Sandy Run NA	NC	Cleveland	2012	100-500	moderate
Brushy Creek Headwaters	NC	Cleveland	2014	100-500	moderate
First Broad River: Crooked Run Creek	NC	Cleveland	2010	100-500	moderate
No Business Creek, Boyd Tract	NC	Cleveland	2007	100-500	moderate
West Shelby Mesic Slope	NC	Cleveland	2016	100-500	moderate
UT of Kings Mountain Res	NC	Gaston	2012	100-500	moderate
Buffalo Shoals Creek	NC	Iredell	2014	100-500	moderate
Cat Square Heartleaf Forest	NC	Lincoln	2012	100-500	moderate
Collinsville (Hughes) Creek Slopes	NC	Polk	2016	100-500	moderate
Fox Knoll Farm	NC	Polk	2016	100-500	moderate
Forest City: Adj to Isothermal CC	NC	Rutherford	2010	100-500	moderate
Jonas Road Rare Plant Site	NC	Rutherford	2014	100-500	moderate
Knob Creek NA	NC	Cleveland	2005	100-500	moderate
Buffalo Creek	NC	Cleveland	2005	100-500	moderate
Kross Keys NA	NC	Polk	2005	100-500	moderate
Catawba River: North Fork Mountain Creek	NC	Catawba	2005	100-500	moderate
Catawba River: Lake James	NC	Burke	2006	100-500	moderate
Hogpen Branch Transplant Site	NC	Rutherford	2005	100-500	moderate
NCDOT TIP R-3603A	NC	Alexander	2017	<100	low
South Mountains Pleasant Grove Uplands	NC	Burke	2016	<100	low
Gunpowder Creek	NC	Caldwell	2012	<100	low
Killian Crossroads	NC	Catawba	2010	<100	low
Pott Creek	NC	Catawba	2012	<100	low
Beaverdam Crk at First Broad River	NC	Cleveland	2011	<100	low
Buffalo Creek: Potts Creek	NC	Cleveland	2012	<100	low
Buffalo Creek: Ravine	NC	Cleveland	2007	<100	low
Hickory Creek - UT (Shelby High School)	NC	Cleveland	2016	<100	low
Boulder Creek Subdivision - Jordan Road	SC	Greenville	2016	<100	low
Gateway Elementary School	SC	Greenville	2017	<100	low
Fanjoy Road Site	NC	Iredell	2015	<100	low
Levan Family Farm	NC	Iredell	2013	<100	low

Site Name	State	County	Last Observed	Total plants	Resilience
Lincoln County, SR-1314	NC	Lincoln	2014	<100	low
Northeast Lincolnton: UT Walker Branch	NC	Lincoln	2009	<100	low
Sandy Spring Church Springhead Swamp	NC	Polk	2005	<100	low
First Broad River: Hickory Creek	NC	Cleveland	2006	<100	low
Smith Cliff/Henry Fork River	NC	Burke	2005	<100	low
First Broad River: Beaverdam Creek Tribs	NC	Cleveland	2006	<100	low

Table 4.2. Population resilience categories by county for dwarf-flowered heartleaf.

County	Very High	High	Moderate	Low	Totals
Alexander	1		1	1	3
Burke/Catawba/Caldwell			1		1
Burke	2		4	2	8
Caldwell	2	2		1	5
Catawba	4	2	4	2	12
Cherokee	1				1
Cleveland/Rutherford	1				1
Cleveland	4	1	7	6	18
Gaston			1		1
Greenville				2	2
Iredell			1	2	3
Lincoln	2		1	2	5
Polk	2		3	1	6
Rutherford	7		3		10
Spartanburg	2				2
Totals	**28**	**5**	**26**	**19**	**78**
% of total	*36*	*7*	*34*	*23*	*100*
Cumulative %	*40*	*43*	*77*	*100*	--

Population Trends

Although we lack an adequate past time series of abundance data for all populations to estimate growth rates or population trends, NCNHP conducted surveys of thirteen of the largest populations across the range of the species from 2012-2016. Table 4.3 shows the results of all of these surveys. Two populations show an increasing trend, nine show a stable trend, and two show a decreasing trend.

Table 4.3. Summary of population trends over 5 years of monitoring data for 13 of the largest populations of dwarf-flowered heartleaf across its range (from: Robinson and Padgett 2016).

Trend	Survey	Site	2016 estimated number of plants (Rosettes)	2016 area occupied (Acres)
Increasing	NCNHP	Cliffside Steam Station (EO 276)	39,535	52
	NCNHP	Broad River: Floyds Creek, Long Branch (EO 177)	12,687	5.67
Stable	NCNHP	Island Creek Bluff/Love Lady Site (EO 029)	50,481	61.76
	NCNHP	Rhyne Preserve (EO 302)	19,873	22.43
	NCNHP	Mills Creek Forest and Seep (EO 023)	1,733	1.39
	NCNHP	New Hope Springhead Swamp (EO 125)	12,235	5.03
	NCNHP	Broad River: Henson's Creek, Brice, & Sandy Mush Outcrop (EO099)	106,940	83.39
	NCNHP	Broad River: Cleghorn Creek, US 221 (EO 176)	6,750	7.24
	NCNHP	Cowpens National Battlefield (SC EO 016, 017, 018)	2,823	6.05
	NCNHP	Peters Creek Preserve (SC EO 011)	3,306	8.98
	NCNHP	Blalock Reservoir (SC EO 007, 031)	3,505	7.59
Decreasing	NCNHP	Second Broad River (Forest City Industrial Complex) (EO 154)	2,576	4.74
	NCNHP	South Fork Catawba River: Jacob Fork, Camp Creek (EO 158)	123	0.09

Current Species Representation

Representation describes the ability of a species to adapt to changing environmental conditions. We lack genetic and ecological diversity data to characterize representation for dwarf-flowered heartleaf. In the absence of species-specific genetic and ecological diversity information, we typically evaluate representation based on the extent and variability of habitat characteristics across the geographical range. However, the dwarf-flowered heartleaf has a very limited range, and after consulting with experts, we decided delineating representative units was not appropriate for this species.

Current Species Redundancy

For the dwarf-flowered heartleaf to maintain viability, the species also needs to exhibit some degree of redundancy. Species-level redundancy reflects the ability of a species to withstand catastrophic events, and is best achieved by having multiple, widely distributed populations relative to the spatial occurrence of catastrophic events. Redundancy for dwarf-flowered heartleaf is the total number and resilience of population segments and their distribution across the species range.

An important question when investigating redundancy for dwarf-flowered heartleaf is, "what exactly is a catastrophe?" We consider a catastrophe to be any population level disturbance that has the potential to negatively influence population resiliency outside of normal environmental and demographic stochasticity. Disturbances often act quickly, like hurricanes, and often with devastating effects, however they can also occur over long periods of time. A disturbance that occurs as a relatively discrete event in time is referred to as a "pulse" disturbance, while more gradual or cumulative pressures on a system are referred to as "press" disturbance. Both types of disturbances are part of the natural variability of dwarf-flowered heartleaf ecological systems, and must be considered when assessing redundancy. While there is certainly a variety of potential pulse disturbances for the species (timber harvest, hydrological alterations, road and right-of-way construction), the primary potential catastrophic disturbances are press disturbances from long term climate change, which have great potential to affect ecosystem processes and communities by altering the underlying abiotic conditions (DeWan et al. 2010).

As stated previously, there are 78 populations of dwarf-flowered heartleaf that have been observed since 2005 (Table 4.1), and resilience of these populations is as follows: 28 (very high); 5 (high); 26 (moderate); 19 (low). The populations are spread across the range, although a majority occur in North Carolina. Although, there appears to be adequate redundancy within the range of dwarf-flowered heartleaf to withstand the impacts of localized press catastrophic disturbances, the species range is very small, making it potentially vulnerable to long-term catastrophic events, such as climate change.

CHAPTER 5: INFLUENCES ON VIABILITY

Hexastylis naniflora populations occur in rapidly growing urban areas with expanding suburbs of Charlotte, NC, to the east; Hickory, NC, to the north; and Greenville and Spartanburg, SC, to the south. At the time of listing, it was determined that the species was most threatened by habitat loss due to the conversion of land to residential, commercial, and industrial use in these areas. In addition to threats associated with residential, commercial, and industrial development, other documented threats include habitat loss from land conversion to agricultural use, timber harvest, hydrological alterations from the damming of ponds, impacts from grazing cattle, ORV damage, trampling from foot traffic, invasive species, highway or road improvements, and erosion or siltation (NCNHP 2016, Robinson and Padgett 2016). Climate change may exacerbate these risk factors through changes in temperature and precipitation.

Threats were assessed for populations monitored by NCNHP during 2012-2016 (Robinson and Padgett 2016), and EOs were reviewed for other documented threats to populations. Indirect or direct threats that were observed, inferred, or suspected to have an impact on populations were recorded and assigned a ranking based on their severity, scope, and immediacy from field observations. The rank for each threat factor determines the overall value for each threat observed at each population. No significant changes in threats within populations were noted from 2012-2016. Threats observed during these years included development, incompatible forestry practices, agriculture, trampling, invasive exotic species, sedimentation, erosion, and road construction.

Below, we summarize primary threats to the viability of dwarf-flowered heartleaf. Primary influences will be carried forward in our future projections in the next section.

Human Population Change

Increasing human populations drive development. With increases in population, there will be increasing conversion of open space to more impervious cover, with a subsequent increase in roads and other associated infrastructure. Increases in roads and impervious cover have the potential to lead to habitat loss and/or fragmentation, a primary risk factor for dwarf-flowered

heartleaf. Tables 5.1-5.2 and Figures 5.1-5.2 show the estimated human population increases for North Carolina and South Carolina counties within the range of the species. The most populous counties include Greenville and Spartanburg in South Carolina, and Catawba, Gaston and Iredell counties in North Carolina.

Table 5.1-Human population projections for North Carolina counties within the range of dwarf-flowered heartleaf. *Source: North Carolina OSBM, Standard Population Estimates.*

County	2018	2023	2028	2033	2037
Alexander	38,609	39,244	39,686	39,992	40,169
Burke	90,865	93,124	95,382	97,644	99,452
Caldwell	83,919	86,723	88,689	91,126	92,870
Catawba	157,424	159,799	162,175	164,549	166,447
Cleveland	98,862	99,685	100,004	100,128	100,170
Gaston	221,112	227,667	237,344	245,276	252,388
Iredell	179,740	195,623	211,501	227,383	240,088
Lincoln	84,494	91,034	96,865	103,069	107,858
Polk	21,273	21,823	22,288	22,681	22,955
Rutherford	67,880	68,154	68,283	68,341	68,368

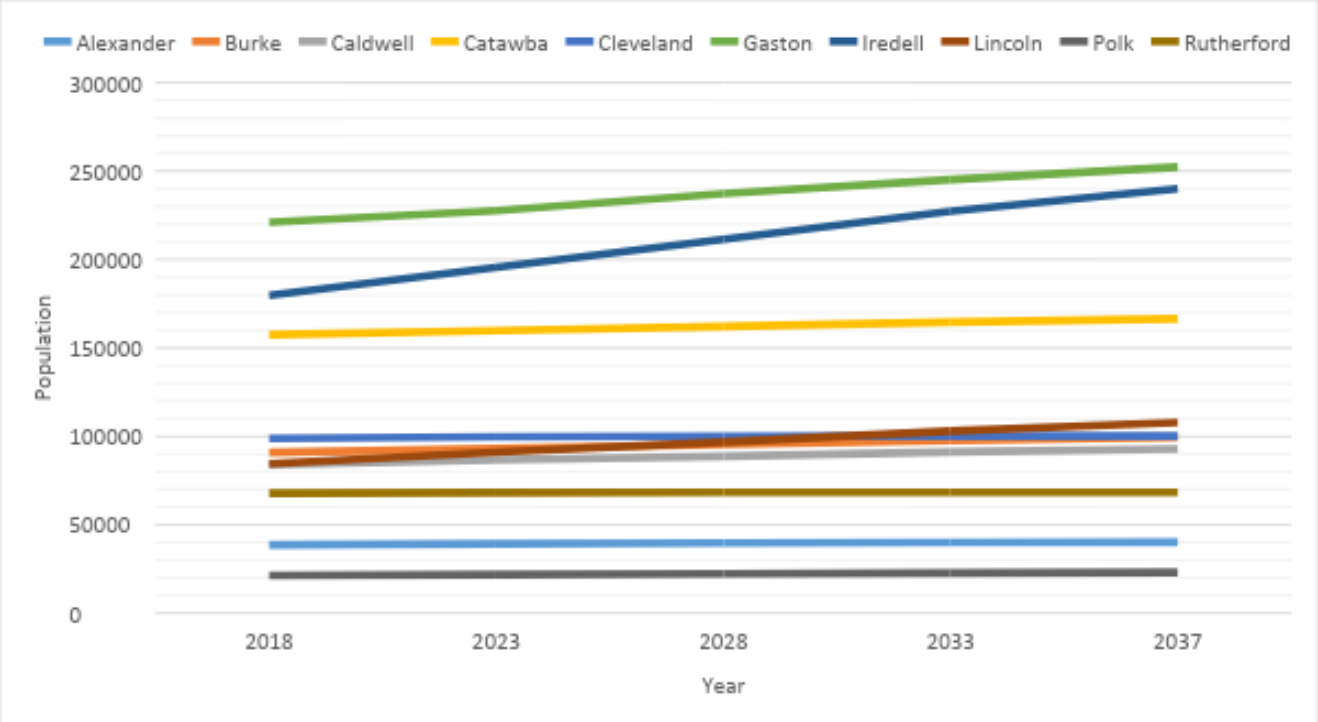


Figure 5.1- Human population projections for North Carolina counties within the range of dwarf-flowered heartleaf. *Source: North Carolina OSBM, Standard Population Estimates.*

Table 5.2- Human population projections for South Carolina counties within the range of dwarf-flowered heartleaf. *Source: U.S. Census Bureau, 2000 Census and 2007 Population Estimates. Population projections calculated by South Carolina Budget and Control Board, Office of Research and Statistics.*

County	2020	2025	2030	2035
Cherokee	61,760	64,760	67,350	70,170
Greenville	492,890	517,740	542,290	567,010
Spartanburg	310,220	323,550	336,810	350,110

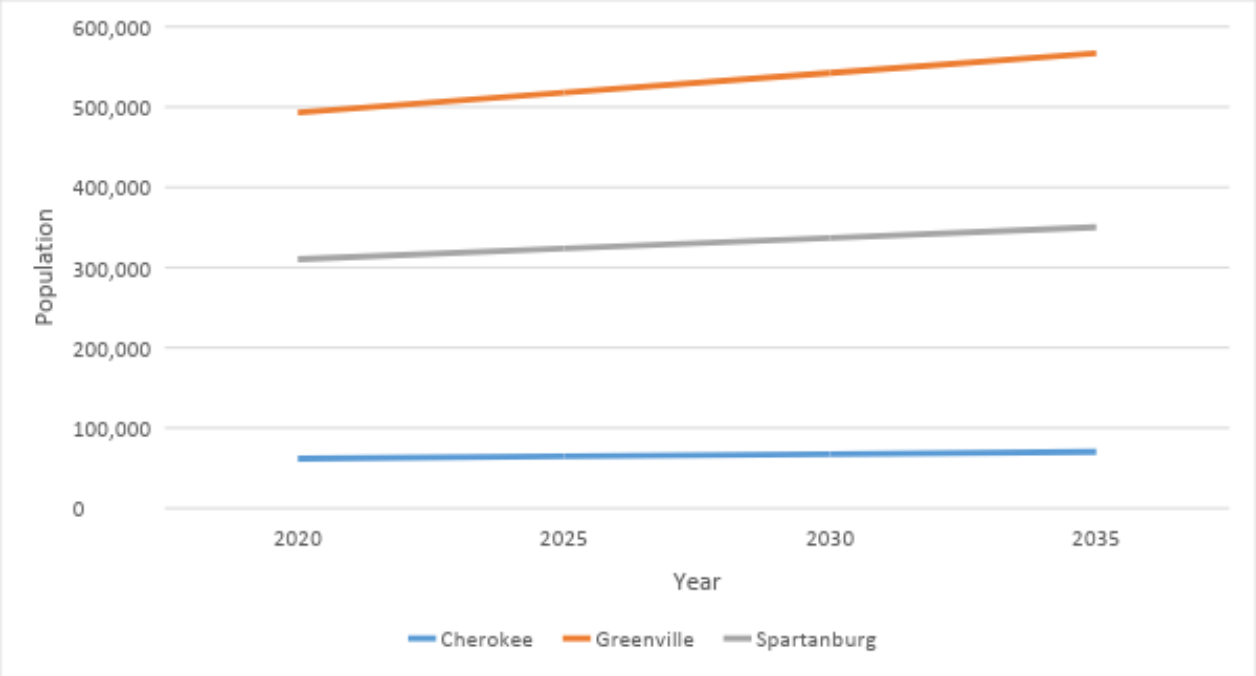


Figure 5.2. Human population projections for South Carolina counties within the range of dwarf-flowered heartleaf. *Source: U.S. Census Bureau, 2000 Census and 2007 Population Estimates. Population projections calculated by South Carolina Budget and Control Board, Office of Research and Statistics.*

Development

A large number of the known populations occur near expanding urban areas and are threatened by the residential, commercial, and industrial development associated with this growth. Populations occurring in more rural areas are threatened by habitat alteration or loss from land conversion to pasture or other agricultural uses, cattle grazing, intensive timber harvesting, residential construction, and construction of small ponds.

A 2010 review of existing NHP EOR data revealed that all or portions of 26 populations (24% of the total) had been directly or indirectly impacted through development projects or other causes such as trash disposal, expansion of residential lawns, cattle, or invasive exotics (NCNHP 2010; SCDNR 2010). Another 16 populations have been specifically reported to be threatened by one or more of these same sources. Therefore, threats have either occurred or are reasonably foreseeable within 42 of the 113 populations (corresponding to 37% of all known populations). Of these 42 populations, all or portions of 22 (50%) had been adversely impacted by activities

requiring ESA Section 7 consultation with the USFWS. The fact that nearly 20% of all known populations had been subject to formal Section 7 consultation illustrates the threats faced by the species.

In the same 2010 review, the most recurrent source of habitat destruction, and certainly the most common trigger for Section 7 consultations involving *H. naniflora* is road and bridge improvement projects. Ten of the 27 largest populations (containing more than 1,000 rosettes) have been the subject of Section 7 consultations between the USFWS and the NCDOT. Collectively, these projects have adversely impacted or are currently expected to impact some 22,135 rosettes. In most cases the Section 7 process has resulted in avoidance or minimization of adverse effects through relocation of plants and/or commitments of on-site protection to those plants remaining (post-construction) within NCDOT right-of-way (ROW).

Other forms of economic development have also resulted in the destruction or modification of habitats occupied by *H. naniflora*; in many cases, these activities have also required Section 7 consultations with the USFWS. Examples of these activities include the maintenance or expansion of hydroelectric and drinking water reservoirs, construction of an industrial development complex, and maintenance activities (in compliance with Federal Aviation Administration standards) at a regional airport. Collectively, these activities have involved the loss or relocation of several thousand rosettes.

Blalock Reservoir in Spartanburg County, South Carolina was once estimated to contain the largest population of *H. naniflora*, with over 11,000 rosettes reported here in 1997 (JJ&G, 1998). This population was the subject of a section 7 consultation as a result of a proposal to raise the elevation of Blalock Reservoir, which provides water supply storage to Spartanburg County and the City of Spartanburg (USFWS, 2001). Approximately one-third of this population was directly threatened by inundation, and the Federal agency committed to the relocation of some 3,054 rosettes to remaining areas of occupied habitat around the reservoir. At the conclusion of formal section 7 consultation, the USFWS anticipated that as many as 6,619 rosettes (assuming that all transplants survived) would be afforded protection through restrictive covenants placed on properties owned by the Spartanburg Water System (SWS) surrounding Blalock Reservoir.

However, this population was last reported to contain a mere 1,400 rosettes (Newberry, 2006), and has twice since been impacted by encroachments from adjacent landowners (Newberry, 2009; Schneider, 2006, and JJ&G, 2006). Some of these apparent declines could be partially an artifact of incomplete survey effort, in that the exhaustive surveys which led to the 1997 estimate (of 11,000 rosettes) have never been repeated. However, it seems unlikely that plants occurring on privately owned shoreline not subject to restrictive covenants would be any more stable than those occurring on properties specifically protected and managed for the species (by SWS).

Invasive Species and Woody Encroachment

Several of the known populations of dwarf-flowered heartleaf occur on steep ravine slopes which also support stands of mixed hardwoods with an understory of mountain laurel (*Kalmia latifolia*) or *Rhododendron spp*. These stands are often very dense and reduce the amount of light reaching the dwarf-flowered heartleaf plants growing below. Under these conditions the plants often show reduced vigor and reduced flower and fruit production. Careful, selective logging or natural tree fall and limited understory removal would open up these populations to more light. Additional light, if not accompanied by increased siltation from the intensive soil disturbances associated with forest clear-cutting, probably would benefit these populations (Gaddy 1981).

Invasive exotic plant species are rampantly spreading throughout riparian corridors and ravines across the range of this species (USFWS 2011). Invasive exotics such as English ivy (*Hedera helix*), Chinese privet (*Ligustrum* spp.), Japanese honeysuckle (*Lonicera japonica*) and Japanese Nepal grass (*Microstegium vimineum*) are known to threaten several populations; however, the scope and magnitude of this threat has not been comprehensively assessed. This threat requires active management in order to be successfully abated. At present, the majority of protected populations are secured against habitat conversion, but lack designated managers with the technical expertise and available resources (funding and personnel) to address this threat.

Climate Change

There is a growing concern that climate change may lead to increased frequency of severe storms and droughts (McLaughlin *et al.* 2002, p. 6074; Golladay *et al.* 2004, p. 504; Cook *et al.* 2004, p. 1015). Because typical habitats for this species include moist soils adjacent to creeks, streamheads, or along lakes and rivers, and plants have been observed to grow larger and have more frequent flowering in floodplains along rivers, lakes, and streams (Newberry 1993), specific effects of climate change to the dwarf-flowered heartleaf are likely related to changes in soil moisture associated with potential increases in drought.

Warming in the Southeast is expected to be greatest in the summer (NCCV 2016) which is predicted to increase drought frequency, while annual mean precipitation is expected to increase slightly, leading to increased flooding events (IPCC 2013, p.7; NCCV 2016). Changes in climate may affect ecosystem processes and communities by altering the abiotic conditions experienced by biotic assemblages resulting in potential effects on community composition and individual species interactions (DeWan et al. 2010, p.7).

Despite the recognition of potential climate effects on ecosystem processes, there is uncertainty about what the exact climate future for the Southeastern US will be and how the ecosystems and species in this region will respond. Although climate change was not a factor leading to the original listing of the species, it should be recognized that the greatest threat from climate change may come from synergistic effects. That is, factors associated with a changing climate may act as risk multipliers by increasing the risk and severity of more imminent threats. As a result, impacts from rapid urbanization in the region might be exacerbated under even a mild to moderate climate future.

Regardless of a pessimistic, optimistic, or status quo climate future, the following systematic changes are expected to be realized to varying degrees in the Southeastern US (IPCC 2013):

- More frequent drought
- More extreme heat (resulting in increases in air and water temperatures, Figure 5-3)

- Increased heavy precipitation events (e.g., flooding)
- More intense storms (e.g., frequency of major hurricanes increases)
- Rising sea level and accompanying storm surge

In recent years, the Southeast has experienced moderate to severe droughts that many observers have implicated in population declines and poor transplant survivorship (NCNHP, 2010). A wildfire, presumably brought on or at least exacerbated by drought conditions, burned portions of one of the largest known populations in 2009 (Foothills Landfill in Caldwell County; Golder and Associates, 2009). Accelerated climate change is expected to increase the frequency and extent of drought conditions across the southeast (Karl, et al. 2009). The extent to which these climate changes will significantly affect populations of dwarf-flowered heartleaf is currently unknown.

Appendices 4a and 4b gives summary reports on historical and future predicted climate parameters from the USGS National Climate Change Viewer for both North Carolina and South Carolina. As discussed above, the trend for these States is consistent with the general trend in the Southeast: more frequent drought, more extreme heat, and increased precipitation events. If these predictions hold true, dwarf-flowered heartleaf habitat would likely be impacted through increased evaporative rates and decreased soil moisture (Appendices 4a and 4b), increased potential for catastrophic wildfire events, as well as potential disruption of stream bank morphology through increased flooding events. Our habitat model indicates a preferred temperature and precipitation range, indicating that the species would be sensitive to a changing climate.

Chapter 6: FUTURE CONDITION

Future Considerations

Our analysis of the past, current, and future influences on what the dwarf-flowered heartleaf needs for long term viability revealed that there are several influences that pose risks to future viability of the species. These risks are primarily related to habitat changes from development and long term climate change. We use projections of urban development to assess potential habitat loss and fragmentation. We also considered how climate change may exacerbate the impacts of development in a qualitative fashion using a narrative approach.

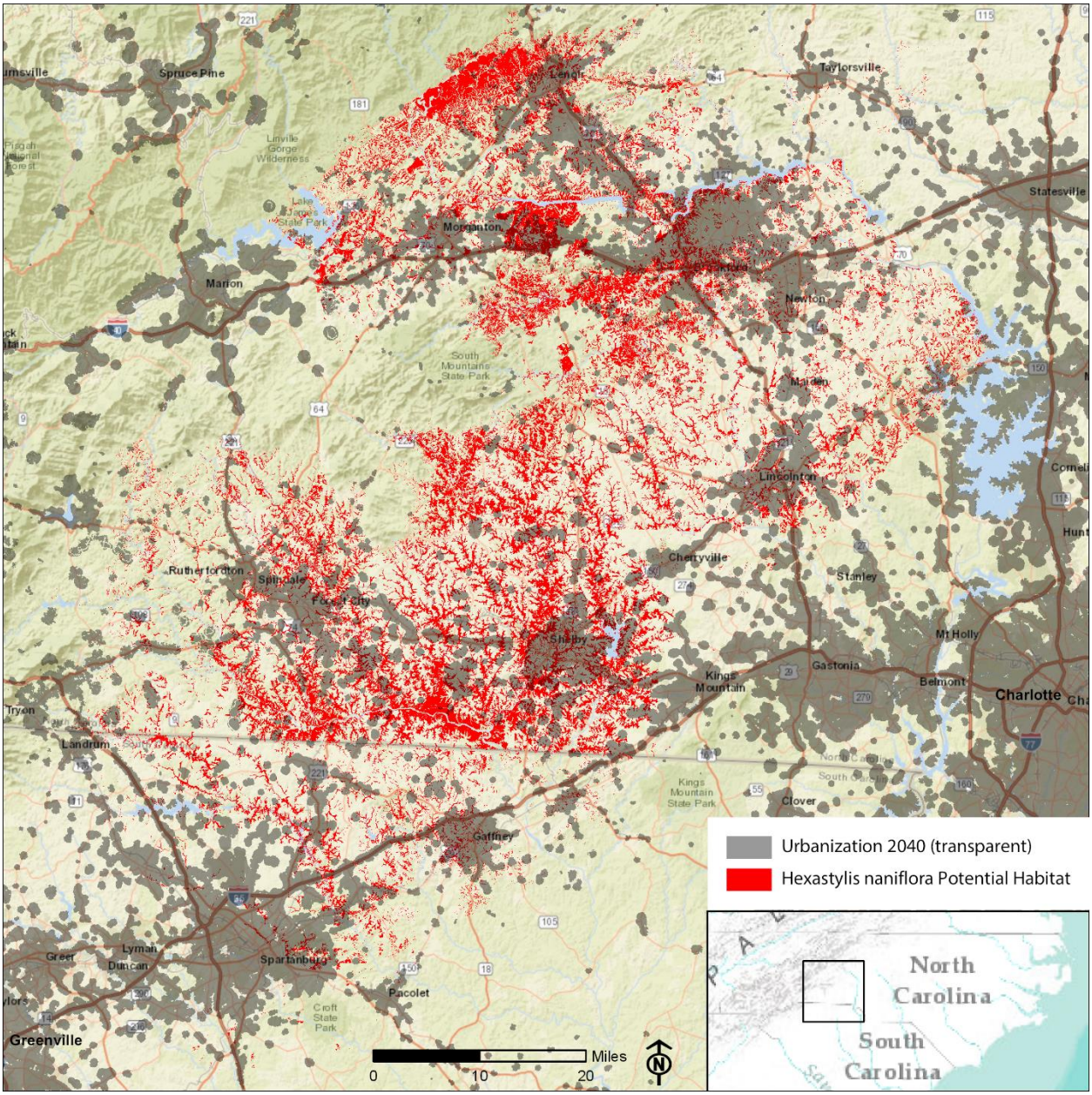
Because the actual impacts of urbanization are unknown, we use three scenarios, projected out to the year 2040, to capture the uncertainty related to the potential impacts to each population's resiliency: Status Quo, Targeted Conservation, and High Development. Results of future projections within each scenario are focused on current populations and potential habitat identified by the Maxent model as described below. Based on the life span of the species, expert input, development as the key risk factor brought forward, uncertainty about future conditions, and lack of knowledge about where additional populations may persist on the landscape, we chose to project populations out to the year 2040 under each scenario, but no further.

In constructing our scenarios, we considered two main influences by which species viability projections could be affected: location of additional populations (positive influence) and habitat loss and fragmentation due to urban development (negative influence). Habitat quantity can be negatively impacted by development or land use change (particularly on private lands) or positively impacted by land acquisition, restoration, and/or introductions into unoccupied sites that already have suitable habitat.

We use the Slope, Land cover, Exclusion, Urbanization, Transportation, and Hillshade (SLEUTH) models to determine areas predicted to be urbanized by 2040 (Figure 6.1). SLEUTH is a cellular automata model that applies transition rules to the states of a gridded series of cells, and in this case the transition is that from undeveloped to developed land cover, otherwise

known as urbanization, and has been successfully applied worldwide over the last 15 years to simulate land use change (Clarke 1995).

Figure 6.1. Results of the SLEUTH model with *Hexastylis naniflora* potential habitat predicted by the MAXENT model overlaid.



The SLEUTH model predictions are broken down by probabilities of urbanization, ranging from 0-100%. We chose 80% probability as our cutoff, as this cutoff has been used by USGS and other SSAs, and this threshold represents a highly likely outlook for urbanization of the

landscape. To forecast viability using urban development projections, we assessed the following:

- % increase in projected development (SLEUTH probability of urbanization >80%) within current populations (from Current Conditions—68 populations)
- % increase in projected development (SLEUTH probability of urbanization >80%) within areas delineated as potential habitat by the Maxent habitat model

There is no data available on the exact relationships between urbanization and the impacts to dwarf-flowered heartleaf. We do know that several current populations are located in areas with surrounding urban landscapes. We also know that urban development has led to extirpation of populations in the past through loss of habitat. Because of this uncertainty, we attempted to capture unknowns in two ways. First, our scenarios reflect a range of potential impacts from urban development. Also, we used two thresholds for % increase in urban development to capture potential deleterious effects: 25% and 50%. Our assumptions were that very small increases in development are unlikely to negatively impact populations; development increase of at least 25% of the area of current populations was likely to have some negative impacts; development increase of at least 50% was likely to have significant impacts to populations. We also assume that populations currently on protected lands are likely to see smaller impacts from urbanization compared to those that are not protected, but protection status (perpetuity vs non-perpetuity) matters. For example, Registered Heritage Areas are non-binding agreements with a land owner, and if the land changes ownership, or the owner decides not to continue with the agreement, then the Registry is no longer valid. Appendix 4 shows the protection status of each delineated population which helped to inform our assessment of resilience under each scenario.

We also assessed potential positive effects by integrating the potential location or rediscovery of additional populations throughout the range into two of our scenarios: Targeted Conservation and Status Quo. We believe this is appropriate for several reasons. First, location of new EOs is common; many of the populations we consider for Current Conditions include detections that have occurred within the last few years. Second, we did not include many older detections (i.e. only included detections since 2005), although many of those detections are likely to persist. Dwarf-flowered heartleaf is a long-lived perennial, and several EOs have been revisited

after more than 10 years and the species was present. For example, one such EO was first observed in 1957 and next observed in 2001. It seems as long as suitable habitat is still present it is reasonable to assume that the species is still there. Finally, there is plenty of predicted suitable habitat present within older EOs based on the Maxent model predictions that were not included as current populations.

The first step in identifying additional areas where dwarf-flowered heartleaf is likely to be found in the future, was to identify EOs from populations that were last observed prior to 2005 (i.e. our cut-off for current populations). Although our focus is on older EOs, where dwarf-flowered heartleaf is likely to persist into the future, we also included current EOs (2005-current) in our analysis because we were interested in how the older EOs compared to those known to be persisting on the landscape since 2005. Also, by including older EOs that are within current delineated populations, we can investigate whether current populations might be predicted to contain more plants than the most recent abundance estimate. For example, many of our current populations consist of multiple EOs, and we only considered EOs that were detected from 2005-current. If these older EOs within current populations that were not included in our Current Condition assessment are found to be likely to persist, then it is possible we underestimated the resilience of that population.

Once these older EOs were identified, we created a 1,000 meter buffer around the population and calculated a number of useful metrics including resilience category based on the last known abundance estimate, Maxent habitat model metrics, and the results of the SLEUTH model to further refine a list of potential sites where the species would likely be found to persist within our 20-25 year projection window. Resilience categories were assessed using last known abundance in the same way as populations assessed in the Current Conditions section (i.e. low = less than 100 individuals; moderate = 100-500 individuals; high = 500-1000 individuals; very high = greater than 1,000 individuals). We assessed two habitat metrics for these older EOs: average Maxent score and % Maxent classified as 0.8-1.0 score. Average Maxent score was calculated by taking the mean Maxent score of all potential habitat within the 1,000 foot buffer. The % Maxent classified as 0.8-1.0 represents the percentage of all potential habitat within the 1,000 foot buffer that falls within the highest habitat class. Together, these two habitat metrics give

general estimates of habitat quantity and quality. Finally, we calculated the total percentage of the 1,000 foot buffer around each EO that is projected to be urbanized in the year 2040, which helps capture the primary risk factor of development when assessing the areas where dwarf-flowered heartleaf is likely to persist. Table 6.1 (North Carolina) and 6.2 (South Carolina) show all of the EOs we considered and the corresponding metrics associated with resilience categories, urban development, and habitat scores.

Table 6.1. North Carolina raw data for metrics assessed to investigate potential sites where dwarf-flowered heartleaf was historically found and is likely to persist. Resilience categories are based on last known abundance estimates as follows: 1 = low; 2 = moderate; 3 = high; 4 = very high. MAXENT Average Mean refers to the mean Maxent score of all potential habitat. % Maxent classified as 0.8-1.0 represents the percentage of all potential habitat that falls within the highest habitat class. % Urban Development refers to the percentage of the 1,000 foot buffer around the EO that is projected to be urbanized in the year 2040.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	2	34	1	3
2				
3	2	22	0	10
4	2	22	0	7
5	2	21	0	0
6				
8	1	27	0	6
9	3	44	4	0
10	4	33	2	0
11				
12	4	54	10	0
13	1	31	1	30
14	2	61	16	7
15				
16	4	18	0	47
17	1	50	13	0
18	1	36	8	2
19				
20	2	22	1	88
21	2	34	4	54

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
23	4	15	0	8
25	1	47	15	30
27				
28	2	43	12	29
29	4	43	8	30
30	4	27	2	74
31	4	30	3	86
32	2	34	2	47
33	2	33	3	0
34	1	49	13	63
35	1	42	10	23
36	1	19	0	12
37	4	41	6	17
38	2	14	0	46
39	1	19	0	11
40	2	37	2	32
44	4	20	0	59
45	1	27	5	13
46	3	42	6	6
47	1	28	1	96
48	1	14	0	12
49	4	61	14	5
50				
51	4	52	11	18
52	2	46	4	0
53	1	35	4	24
54	1	35	1	10
55	4	30	0	0
56	2	40	2	6
57	2	21	0	80
58	1	42	5	0
59	2	11	0	49
60	1	25	0	2
61	3	41	0	0
62	2	34	0	0
63	1	27	0	6
64	2	39	9	11
69	2	46	11	19
70	2	38	1	0
71	2	30	2	0

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
72	2	52	14	0
73	4	60	17	1
74	3	65	14	4
75	4	47	6	9
76	4	42	4	10
77	3	31	1	27
79	2	39	1	0
80	1	43	4	15
83	2	17	0	11
84	2	13	0	1
85	2	42	4	5
87				
89	2	13	2	0
90	2	28	2	0
91	1	49	5	0
92	2	15	0	30
106	4	39	4	38
107	1	14	0	40
113	4	46	4	7
114				
115	2	37	3	26
118	3	42	0	9
121	2	41	5	0
122	1	12	0	39
124	1	12	0	9
125	4	15	0	41
130	2	17	0	24
149	4	64	17	3
151	2	16	0	27
154	4	30	1	22
157	2	20	0	0
158	3	36	7	5
159	4	62	24	60
160	3	62	24	32
161	4	64	28	30
162	1	32	2	58
163	2	15	0	56
164	3	18	0	52
165	1	13	0	56
166	1	14	0	40

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
167	4	30	0	20
168	4	19	0	34
169	1	30	0	12
170	2	17	0	40
172	1	39	3	7
173	2	30	1	48
174	1	42	4	16
175				
180	2	21	1	0
181	4	29	2	0
182	4	45	4	0
183	2	15	0	5
184	4	19	0	19
187	2	20	1	35
188	2	24	0	53
189	1	25	0	14
190				
191	2	34	2	0
192	2	35	3	0
193	2	36	7	6
194	4	51	14	18
195	1	21	0	96
196	1	23	4	67
197	4	35	8	38
198	2	32	6	25
199	2	29	5	43
200	1	26	2	87
201	1	39	4	63
202	4	35	4	85
203	1	43	4	49
204				
205	2	43	1	49
206	1	37	3	66
207	2	33	2	85
208	1	32	1	67
209	2	33	2	94
210				
212	1	37	3	85
213	1	36	4	72
219	1	32	1	4

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
222	2	23	3	7
223				
224	1	22	3	17
225	2	24	2	12
227	4	55	2	5
229	2	28	0	21
230	1	54	15	13
231	1	41	7	0
233	4	53	12	14
235	2	50	8	6
236	2	62	14	5
237	2	67	16	5
238	4	51	15	0
239	2	63	14	5
240	1	57	18	0
241	2	62	16	3
242	1	53	9	0
246	1	62	13	4
249	4	47	5	0
250	4	45	4	0
251	4	43	4	0
254	2	54	18	6
255				
256	2	54	15	13
258	3	19	0	51
259	4	25	0	0
262	4	29	2	50
263				
264				
265				
266				
267	2	29	1	0
268	1	33	2	0
269	2	49	17	0
270	1	46	18	1
271	1	26	7	0
272	1	33	0	71
273	2	28	2	0
274	2	50	8	0
275	2	12	0	0

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
276	4	42	5	21
277				
278				
279	1	32	4	89
280	2	64	30	30
281	1	64	31	36
282	1	64	31	51
283	1	65	34	59
284	1	64	35	45
286				
287	2	15	0	35
291	2	21	1	84
292	2	14	0	83
293	1	8	0	16
294	2	36	4	61
296	2	3	0	5
297				
298	2	16	0	1
299	1	12	0	0
300	1	9	0	18
303	2	31	0	0
304	2	31	0	0
305	1	30	2	0
306	1	4	0	53
308	2	15	0	3
309	1	5	0	0
310	4	58	26	35
311	2	15	0	0
312	4	17	0	57
313				
314				
315	1	36	4	61
317	1	15	0	53
318	2	34	4	52
319	4	43	4	10
320	4	41	6	98
321				

Min	1	3	0	0
Max	4	67	35	98

Table 6.2. South Carolina raw data for metrics assessed to investigate potential sites where dwarf-flowered heartleaf was historically found and is likely to persist. Resilience categories are based on last known abundance estimates as follows: 1 = low; 2 = moderate; 3 = high; 4 = very high. MAXENT Average Mean refers to the mean Maxent score of all potential habitat. % Maxent classified as 0.8-1.0 represents the percentage of all potential habitat that falls within the highest habitat class. % Urban Development refers to the percentage of the 1,000 foot buffer around the EO that is projected to be urbanized in the year 2040.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	2	21	0	0
2	2	1	0	4
3				
4	1	13	0	10
5	2	0	0	64
6	1	0	0	36
7	4	27	0	35
8	2	0	0	14
9				
10				
11	4	14	0	52
12				
13	1	7	0	100
14	4	14	0	43
15	1	0	0	4
16	4	22	0	38
17	4	22	0	33
18	3	19	0	52
19	1	12	0	65
20	2	5	0	100
21	3	5	0	90
22	1	0	0	0
23				
24	1	4	0	3
25	1	14	0	48
26	4	12	0	65
27	4	18	1	40

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
28	4	19	1	49
29				
30	2	7	0	88
31	4	0	0	0
32	2	7	0	93
33	2	2	0	20
34	1	31	3	1
35	1	23	1	53
36	2	6	0	0
37	1	24	2	0
38	4	5	0	37
39	1	6	0	1
40	2	6	0	20
41	1	11	0	87
42	2	3	0	6
43	1	23	0	43
44				
45				
46	1	10	0	96
47				
48				
49	3	8	0	70
50	2	5	0	54
51	1	0	0	35
52	3	0	0	0
53	2	10	0	66
54	2	9	0	91
55	1	4	0	99
56	2	14	0	96
57	3	15	0	38
59	2	4	0	17
60	4	17	1	12

Min	1	0	0	0
Max	4	31	3	100

Next, we implemented a set of ranking rules using the data from Tables 6.1 and 6.2 to further assess which EOs had a higher likelihood of persistence on the landscape. We used SMART

methodology to quantify and implement our ranking rules. Because the metrics of interest vary in data type (i.e. categorical vs continuous) and range of values (i.e. not all continuous variables have the same maximum and minimum), our first step was to normalize all of the data on a scale of 0-100. Normalization techniques allow for aggregation of criteria with numerical and comparable data. We decided to analyze North and South Carolina data separately because the Maxent model predicts habitat differently across state lines due to differences in soil classification. We weighted each variable according to our opinion of the level of contribution each variable had to the probability of persistence of that particular EO. This resulted in abundance having the highest weight (100%), with habitat (as calculated by average Maxent score) and urbanization given relatively similar weighting (80%). The results of the normalization procedure and weighting can be found in Tables 6.3 and 6.4.

Table 6.3. Normalized scores for SMART analysis of North Carolina EOs and weighting scores. Resilience category represents the normalized scoring based on the last known abundance (0=low; 33=moderate; 67=high; 100=very high); MAXENT Mean is the normalized score of the average Maxent rank of all potential habitat; MAXENT percent 0.8-1 represents the normalized score of the percentage of potential habitat that falls within the highest rank category; 80% or greater SLEUTH Percent of Total is the total amount of current urbanization plus predicted urbanization at year 2040 (>80% probability) from the SLEUTH model.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	33	49	3	97
2				
3	33	30	0	90
4	33	29	0	93
5	33	28	1	100
6				
8	0	37	0	94
9	67	65	11	100
10	100	46	6	100
11				
12	100	80	28	100
13	0	43	2	69
14	33	90	44	93
15				

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
16	100	23	0	52
17	0	73	37	100
18	0	52	22	98
19				
20	33	30	3	11
21	33	48	12	45
23	100	19	0	92
25	0	68	42	69
27				
28	33	62	33	71
29	100	63	22	69
30	100	38	5	24
31	100	43	8	12
32	33	48	5	52
33	33	47	8	100
34	0	73	37	35
35	0	60	29	77
36	0	25	0	88
37	100	60	17	82
38	33	17	0	53
39	0	24	0	89
40	33	54	7	67
44	100	26	1	40
45	0	37	14	86
46	67	60	18	94
47	0	39	2	2
48	0	17	0	88
49	100	91	39	95
50				
51	100	77	31	82
52	33	68	11	100
53	0	50	11	76
54	0	49	1	90
55	100	43	0	100
56	33	58	7	94
57	33	28	0	19
58	0	60	15	100
59	33	12	0	50
60	0	34	1	98
61	67	59	1	100

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
62	33	49	0	100
63	0	38	0	94
64	33	56	24	88
69	33	67	31	80
70	33	55	3	100
71	33	42	5	100
72	33	77	41	100
73	100	89	48	99
74	67	97	41	95
75	100	69	16	91
76	100	61	11	89
77	67	43	2	72
79	33	56	4	100
80	0	62	11	85
83	33	22	0	89
84	33	15	0	99
85	33	61	10	95
87				
89	33	15	5	100
90	33	38	5	100
91	0	71	13	100
92	33	18	0	70
106	100	56	10	61
107	0	16	0	59
113	100	68	11	93
114				
115	33	53	8	74
118	67	61	1	91
121	33	59	13	100
122	0	14	0	60
124	0	13	0	91
125	100	19	0	58
130	33	22	0	76
149	100	95	49	97
151	33	20	0	72
154	100	41	2	78
157	33	26	0	100
158	67	51	20	95
159	100	92	69	39
160	67	92	69	68

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
161	100	95	79	69
162	0	45	7	41
163	33	18	0	43
164	67	24	0	47
165	0	16	0	43
166	0	16	0	59
167	100	41	0	79
168	100	25	0	65
169	0	42	0	88
170	33	22	0	60
172	0	56	8	93
173	33	42	3	52
174	0	62	12	84
175				
180	33	28	2	100
181	100	41	6	100
182	100	66	12	100
183	33	18	1	95
184	100	24	0	81
187	33	27	2	64
188	33	33	0	46
189	0	33	1	86
190				
191	33	48	7	100
192	33	49	10	100
193	33	51	19	94
194	100	75	40	81
195	0	28	0	3
196	0	30	10	32
197	100	50	24	61
198	33	45	18	74
199	33	41	14	56
200	0	35	6	11
201	0	56	11	36
202	100	49	11	13
203	0	62	11	50
204				
205	33	62	4	50
206	0	52	8	33
207	33	47	4	14

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
208	0	45	4	32
209	33	46	5	4
210				
212	0	53	9	14
213	0	52	11	27
219	0	45	2	96
222	33	31	9	92
223				
224	0	29	8	83
225	33	32	6	88
227	100	81	7	95
229	33	39	0	79
230	0	80	44	87
231	0	59	20	100
233	100	79	34	86
235	33	74	22	94
236	33	93	41	95
237	33	100	46	95
238	100	74	41	100
239	33	94	40	94
240	0	85	51	100
241	33	93	47	97
242	0	78	27	100
246	0	93	38	95
249	100	68	13	100
250	100	65	12	100
251	100	62	11	100
254	33	80	51	93
255				
256	33	80	44	87
258	67	25	0	48
259	100	34	0	100
262	100	41	6	49
263				
264				
265				
266				
267	33	41	3	100
268	0	46	7	100
269	33	72	49	100

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
270	0	67	52	99
271	0	35	19	100
272	0	47	0	28
273	33	39	7	100
274	33	73	23	100
275	33	14	0	100
276	100	61	14	79
277				
278				
279	0	46	11	9
280	33	95	85	70
281	0	95	88	64
282	0	96	88	48
283	0	97	95	40
284	0	95	100	54
286				
287	33	18	0	64
291	33	28	4	14
292	33	16	0	16
293	0	7	0	84
294	33	52	11	38
296	33	0	0	95
297				
298	33	20	0	99
299	0	13	0	100
300	0	9	0	82
303	33	44	1	100
304	33	43	0	100
305	0	42	5	100
306	0	1	0	46
308	33	18	0	97
309	0	3	0	100
310	100	86	75	64
311	33	19	0	100
312	100	22	0	42
313				
314				
315	0	51	10	38
317	0	19	0	46
318	33	48	12	47

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
319	100	63	12	89
320	100	60	17	0
321				

Weights			
100	60	20	80

Table 6.4. Normalized scores for SMART analysis of South Carolina EOs and weighting scores. Resilience category represents the normalized scoring based on the last known abundance (0=low; 33=moderate; 67=high; 100=very high); MAXENT Mean is the normalized score of the average Maxent rank of all potential habitat; MAXENT percent 0.8-1 represents the normalized score of the percentage of potential habitat that falls within the highest rank category; 80% or greater SLEUTH Percent of Total is the total amount of current urbanization plus predicted urbanization at year 2040 (>80% probability) from the SLEUTH model.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
1	33	67	14	100
2	33	2	0	96
3				
4	0	42	3	90
5	33	0	0	36
6	0	0	0	64
7	100	87	2	65
8	33	0	0	86
9				
10				
11	100	43	0	48
12				
13	0	23	0	0
14	100	43	0	57
15	0	0	0	96
16	100	72	1	62
17	100	70	1	67
18	67	62	0	48
19	0	37	0	35

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
20	33	16	0	0
21	67	15	0	10
22	0	1	0	100
23				
24	0	13	0	97
25	0	44	0	52
26	100	40	0	35
27	100	56	18	60
28	100	60	28	51
29				
30	33	22	0	12
31	100	0	0	100
32	33	23	0	7
33	33	5	0	80
34	0	100	100	99
35	0	75	34	47
36	33	18	0	100
37	0	78	66	100
38	100	16	0	63
39	0	19	0	99
40	33	18	0	80
41	0	36	0	13
42	33	10	0	94
43	0	72	0	57
44				
45				
46	0	32	0	4
47				
48				
49	67	27	0	30
50	33	16	0	46
51	0	1	0	65
52	67	0	0	100
53	33	33	0	34
54	33	29	0	9
55	0	13	0	1
56	33	43	0	4
57	67	47	8	62
59	33	13	0	83
60	100	53	21	88

EO_Code	Resilience Category	Average Maxent Score	% Maxent classified as 0.8-1.0	% Urban Development
	Weights			
	100	60	20	80

To determine a final rank for likelihood of persistence, we calculated a weighted sum for each EO. We then converted the weighted sum to a final rank value that ranged from 0-100. Finally, we determined the top 10% or 90th percentile, and top 25% or 75th percentile ranking for EOs in each state. Table 6.5 summarizes the final ranks and top 10% and 25% percentile ranks for North and South Carolina. We will include the top 10% in the status quo scenario, and the top 25% in the conservation scenario.

Table 6.5. Final Rank Scores for EOs in North and South Carolina. Dark green represents the top 10% of scores, and light green includes the top 25% of scores.

EO not part of a current population
EO included as part of a current population
EO is a part of a current population but last detection was prior to 2005
Eliminated/not scored

South Carolina		North Carolina	
EO_Code	Final Score	EO_Code	Final Score
60	79	149	94
7	79	73	93
17	75	49	92
16	74	12	90
27	71	238	90
28	70	161	88
31	69	227	87
14	66	249	86
11	63	233	86
38	62	182	85
34	61	250	85
1	60	251	84
26	59	194	84
52	56	51	84
57	56	310	84
18	55	75	84
37	54	113	84
36	48	319	81
42	44	76	81

2	43
40	42
59	41
49	41
8	39
33	39
4	37
39	35
35	34
43	34
24	33
21	32
22	31
53	31
50	31
15	30
25	26
56	24
5	24
54	22
30	22
32	20
51	20
6	20
19	19
20	17
41	12
46	8
13	5
55	3
3	0
9	0
10	0
12	0
23	0
29	0
44	0
45	0
47	0
48	0

74	81
10	80
181	79
55	79
37	79
276	78
259	77
159	77
29	76
160	73
167	72
9	72
154	72
23	71
106	71
197	71
61	70
46	70
184	69
237	69
158	68
118	68
241	68
239	67
236	66
14	66
72	64
168	64
254	64
269	64
262	64
280	63
274	62
256	62
125	61
235	60
52	60
16	60
121	58
77	58
85	57

79	57
44	57
70	57
312	56
192	56
56	56
69	55
33	55
30	55
191	55
193	55
64	55
62	55
202	55
240	54
1	54
303	54
246	54
71	54
320	54
304	54
267	53
273	53
90	53
31	53
28	51
242	51
17	51
5	50
180	50
270	50
157	50
222	49
230	49
115	48
281	48
91	48
4	48
298	48
311	48
225	48

198	47
89	47
3	47
84	47
308	47
275	47
183	46
40	46
284	46
258	46
231	46
229	46
58	46
164	46
83	45
282	44
18	44
205	43
172	42
296	42
283	42
268	42
80	41
130	41
174	41
305	41
199	41
271	40
25	40
32	40
219	40
35	40
151	40
54	39
318	39
187	39
173	39
92	39
21	39
60	38
63	38

8	38
294	37
169	37
287	37
170	36
45	36
53	36
188	34
189	34
299	34
38	33
224	33
39	33
36	33
13	32
309	31
124	31
59	31
48	31
34	30
203	30
163	30
207	28
293	27
300	27
57	25
209	25
201	25
315	24
291	24
162	23
20	23
206	23
107	22
166	22
122	22
292	21
213	21
208	20
272	20
317	19

196	18
212	17
165	17
306	14
279	14
200	12
47	10
195	7
2	0
6	0
11	0
15	0
19	0
27	0
50	0
87	0
114	0
175	0
190	0
204	0
210	0
223	0
255	0
263	0
264	0
265	0
266	0
277	0
278	0
286	0
297	0
313	0
314	0
321	0

Below we describe how we integrated potential positive and negative influences across the scenarios. We can assume there is some tipping point at which an area becomes so urbanized it is unsuitable for dwarf-flowered heartleaf, but we don't know exactly what that tipping point is. Similarly, we can assume additional populations are likely to be found or rediscovered across the

range, but there is no clear way to predict the exact number or location of these populations. Although there is great uncertainty associated with how the species will be influenced by these factors, the three scenarios are intended to capture the range of this uncertainty. Note, changes in climate have potential to exacerbate the effects of urbanization, but these effects are not likely to occur within our projection window (e.g. 2040).

Status Quo Scenario

Under the status quo scenario, we assume a few populations will be identified as persisting throughout the range, and that there will be a range of impacts from urbanization that are related to the % increase in urban development and whether a population is protected or not. We assessed population resilience under the following assumptions:

- Two additional populations are identified as persisting based on Maxent model metrics, last known abundance category, and total predicted urbanization from SLEUTH modelling. Six additional EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist based on the same metrics.
- Potential impacts of urban development based on SLEUTH Model projections focused on current delineated populations:
    - Protected areas
        - Protected in perpetuity—no negative impacts from urbanization
        - Voluntary protection/non-perpetuity—population drops 1 resilience rank if % increase in urbanization exceeds >50% threshold
    - Non-protected—population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold

High Development Scenario

Under the high development scenario, we assume no additional populations will be identified as persisting throughout the range, and that impacts from urbanization that are relatively high, and are also affected by whether a population is protected or not. We assessed population resilience under the following assumptions:

- No additional populations are identified as persisting
- Potential impacts of urban development based on SLEUTH Model projections focused on current delineated populations:
    - Protected areas
        - Protected in perpetuity— population drops 1 resilience rank if % increase in urbanization exceeds >50% threshold
        - Voluntary protection/non-perpetuity— population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold
    - Non-protected—population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold; extirpation of populations if % increase in urbanization exceeds >90% threshold.

Targeted Conservation Scenario

Under the targeted conservation scenario, we assume it is likely several additional populations (i.e. more than status quo scenario) will be identified as persisting throughout the range. The range of impacts from urbanization are the same as the Status Quo scenario. We assessed population resilience under the following assumptions:

- Six populations are identified as persisting based on Maxent model metrics, last known abundance category, and total predicted urbanization from SLEUTH modelling. Six additional EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist based on the same metrics.
- Potential impacts of urban development based on SLEUTH Model projections focused on current delineated populations:
    - Protected areas
        - Protected in perpetuity—no impacts from urbanization
        - Voluntary protection/non-perpetuity—population drops 1 resilience rank if % increase in urbanization exceeds >50% threshold

- Non-protected—population drops 1 resilience rank if % increase in urbanization exceeds >25% threshold; population drops 2 resilience ranks if % increase in urbanization exceeds >50% threshold

Future Resilience

Our focus on future resilience of dwarf-flowered heartleaf is on the potential impacts from urbanization. Table 6.6 shows a summary of currently delineated populations and the predicted urban development to occur within each of the populations. The table only includes those populations that already have some current amount of urban development, or are predicted to have some amount of development occur by the year 2040. Populations not included in this table are not predicted to be urbanized at all, so for the purposes of future analysis, will be assumed to retain the same resilience category as current. For those populations included in the table, we focus on those populations that are anticipated to increase in urbanization beyond a threshold value, depending on the scenario, but thresholds include >25% and >50% increases. Also taken into account is whether or not a population is on protected lands, and if so, whether the population is protected in perpetuity or not. Below is a summary of projected future resilience under each of the three scenarios.

Table 6.6. Results of the SLEUTH model. Populations consist of both stand-alone EOs and aggregates of multiple EOs following the definition of delineating demographic populations from Chapter 4. Included are only those populations that already have some current amount of urban development, or are predicted to have some amount of development occur by the year 2040. Red cells indicate populations that are predicted to increase >50% in urbanization. Orange cells indicate populations that are predicted to increase >25% in urbanization.

Population Number	Total Area (sq m)	Already classed Urban	80% chance	90% chance	95% chance	97.5% chance	100% chance	>80%
206	17346.37096	0.40%	0.00%	0.00%	0.00%	6.24%	93.41%	99.65%
306	7804.656249	0.00%	15.11%	49.91%	7.83%	0.00%	22.40%	95.24%
208	55360.86786	17.31%	0.00%	0.00%	0.00%	0.00%	82.69%	82.69%
279	1951.661571	0.00%	0.00%	0.00%	0.00%	0.00%	80.85%	80.85%
214	15043.2984	0.00%	0.00%	1.44%	10.97%	0.00%	55.72%	68.13%
248	25486.15611	28.80%	0.00%	3.22%	0.02%	0.02%	53.03%	56.30%
316	43177.79587	20.06%	0.00%	16.68%	7.08%	0.00%	20.67%	44.43%
247	49898.17159	5.87%	0.00%	6.37%	0.00%	0.00%	23.35%	29.73%
291	11666.76374	35.39%	12.28%	13.53%	2.43%	0.00%	0.23%	28.47%
287	7901.775408	0.00%	0.00%	11.50%	0.00%	0.00%	14.25%	25.75%
312	6535.273235	0.00%	25.28%	0.00%	0.00%	0.00%	0.00%	25.28%
32	31220.60253	60.74%	0.00%	20.39%	0.00%	0.00%	0.00%	20.39%
177	26954.54153	25.34%	12.19%	0.92%	0.10%	5.31%	0.13%	18.66%
292	15611.18205	0.00%	0.00%	0.00%	0.00%	0.00%	18.40%	18.40%
261	21644.22924	0.00%	0.00%	13.21%	3.35%	0.00%	0.00%	16.56%
295	23486.00987	18.20%	0.00%	3.41%	11.99%	0.25%	0.00%	15.65%
125	20742.3249	0.00%	1.02%	5.65%	0.00%	6.67%	0.00%	13.34%
59	8172.007769	0.00%	13.09%	0.00%	0.00%	0.00%	0.00%	13.09%
302	120342.0641	1.46%	2.55%	2.55%	0.77%	2.33%	3.98%	12.19%
178	376781.2214	28.59%	2.79%	2.40%	0.68%	0.59%	2.64%	9.11%
93	43754.11642	0.19%	0.00%	0.00%	0.00%	0.00%	7.82%	7.82%
77	6044.427562	0.00%	1.51%	6.14%	0.00%	0.00%	0.00%	7.64%
179	15145.19453	85.06%	1.14%	0.00%	5.12%	0.00%	0.49%	6.75%
44	15081.76951	61.17%	0.27%	0.00%	0.00%	0.00%	4.68%	4.95%
252	39595.93143	63.47%	0.00%	3.80%	0.00%	0.00%	0.00%	3.80%
100	423621.7376	9.01%	1.32%	1.10%	0.72%	0.14%	0.00%	3.27%
276	123688.7819	0.61%	0.36%	1.87%	0.01%	0.00%	0.00%	2.24%
216	66424.06073	0.00%	0.91%	0.00%	0.00%	0.00%	0.00%	0.91%
154	33924.92259	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%	0.37%
29	249998.8742	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.05%
1	30711.68144	0.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	36339.91976	11.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	24498.03483	24.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
31	42929.76479	100.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
96	95947.32128	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
130	1168.240433	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
176	39787.48373	0.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
195	7805.599588	99.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
317	584.7346337	99.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
318	5396.859208	99.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
320	125.5182447	98.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Status Quo Scenario

In the Status Quo scenario, there are predicted to be 75 populations of dwarf-flowered heartleaf on the landscape (Table 6.7). The predicted resilience of the extant populations are as follows: very high (27); high (6); moderate (23); low (17); and 2 additional populations identified as persisting, with an unknown resilience. Six EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist, but resilience is unchanged because each of the populations are already predicted to be of very high resilience. When comparing future population resilience to current condition a few populations drop in their resilience category. One current population of very high resilience is predicted to drop to high resilience; two moderate populations are predicted to drop to low resilience; and five populations (one currently moderate and four currently low) are predicted to be extirpated due to urban development. Of the seven additional populations predicted to persist under this scenario, four are in South Carolina, and three in North Carolina. We did not assess resilience for these additional populations, but it is worth mentioning that the last time these populations were detected, resilience was very high (2), high (1), and moderate (4).

Table 6.7. Predicted resilience categories for *Hexastylis naniflora* populations under the Status Quo scenario, and comparison to current condition.

Site Name	Current Resilience	Status Quo
DNR Peters Creek Heritage Preserve	very high	very high
Cowpens NBF	very high	very high
Mill Creek Forest and Seep	very high	very high
Island Creek Heath Bluff	very high	very high
NCDOT TIP: R-2824	very high	very high
Murrays Mill/Upper Balls Creek NA	very high	very high
Big Horse Creek Rare Plant Site	very high	very high
Broad River/Sandy Run NA	very high	very high
New Hope Springhead Swamp	very high	very high
Facebook Site	very high	very high
Davenport Road/Mountain View Rare Plant Site	very high	very high
Broad River: Floyds Creek	very high	very high
Catawba River: Hoyle Crk-Micol Crk	very high	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	very high	very high
Buffalo Creek: Tributaries N and S of SR 2047	very high	high

Site Name	Current Resilience	Status Quo
Buffalo Creek: Kings Mountain Res	very high	very high
Broad River: Brushy Creek	very high	very high
Peaked Top Rare Plant Site/Foothills Landfill	very high	very high
Jacob Fork West Corridor	very high	very high
Floyds Creek Tributray Rare Plant Site	very high	very high
New Bethel Rare Plant Site	very high	very high
Leepers Creek Heartleaf Site	very high	very high
Cliffside Steam Station	very high	very high
Rhyne Conservation Preserve	very high	very high
Glade Creek, Alex County	very high	very high
Richardson Creek trib above Toms Lake	very high	very high
Gunpowder Creek: South of Hudson	very high	very high
Taylor Blaylock Res	very high	very high
Little Gunpowder Creek Rare Plant Site 1	high	high
Little Gunpowder Creek Rare Plant Site 2	high	high
Buffalo Creek Rare Plant Site	high	high
Northern Catawba County	high	high
Rock Barn Solar Farm	high	high
NCDOT TIP R-2824	moderate	moderate
Third Creek Rare Plant Site	moderate	moderate
Knob Creek NA	moderate	moderate
Buffalo Creek: Northeast of SR 1903	moderate	moderate
West Shelby Mesic Slope	moderate	low
Cat Square Heartleaf Forest	moderate	low
Kross Keys NA	moderate	moderate
First Broad River: Crooked Run Creek	moderate	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	moderate	moderate
Catawba River: North Fork Mountain Creek	moderate	moderate
Catawba River: Lake James	moderate	moderate
Hogpen Branch Transplant Site	moderate	moderate
Jonas Road Rare Plant Site	moderate	extirpated
South Fork Catawba River, Henry Fork	moderate	moderate
No Business Creek, Boyd Tract	moderate	moderate
Broad River/Sandy Run NA	moderate	moderate
Buffalo Shoals Creek	moderate	moderate
Fox Knoll Farm	moderate	moderate
Forest City: Adj to Isothermal CC	moderate	moderate
Hickory Area	moderate	moderate
UT of Kings Mountain Res	moderate	moderate

Site Name	Current Resilience	Status Quo
Brushy Creek Headwaters	moderate	moderate
Smith Cliff/Henry Fork River	moderate	moderate
Simms Hill/Little River Uplands	moderate	moderate
Collinsville (Hughes) Creek Slopes	moderate	moderate
Burke County - Drowning Creek UT	moderate	moderate
Sandy Spring Church Springhead Swamp	low	low
First Broad River: Hickory Creek	low	low
Buffalo Creek: Ravine	low	extirpated
Buffalo Creek: Potts Creek	low	extirpated
Smith Cliff/Henry Fork River	low	low
Pott Creek	low	low
Northeast Lincolnton: UT Walker Branch	low	extirpated
Gunpowder Creek	low	low
Killian Crossroads	low	low
Beaverdam Crk at First Broad River	low	low
Lincoln County, SR-1314	low	low
Levan Family Farm	low	low
Fanjoy Road Site	low	extirpated
First Broad River: Beaverdam Creek Tribs	low	low
South Mountains Pleasant Grove Uplands	low	low
NCDOT TIP R-3603A	low	low
Hickory Creek - UT (Shelby High School)	low	low
Boulder Creek Subdivision	low	low
Gateway Elementary School	low	low
First Broad River (North Carolina)	n/a	present
Cherokee Creek/Bonner and Robin School Roads	n/a	present

High Development Scenario

In the High Development scenario, there are predicted to be 72 populations of dwarf-flowered heartleaf on the landscape (Table 6.8). The predicted resilience of the extant populations are as follows: very high (27); high (4); moderate (25); and low (16). No new future populations are predicted to be discovered. When comparing future population resilience to current condition a few populations drop in their resilience category. One current population of very high resilience is predicted to drop to moderate resilience; one high resilience population is predicted to drop to moderate; two moderate populations are predicted to drop to low resilience; and six populations (one currently moderate and five currently low) are predicted to be extirpated due to urban development.

Table 6.8. Predicted resilience categories for *Hexastylis naniflora* populations under the High Development scenario, and comparison to current condition.

Site Name	Current Resilience	High Development
DNR Peters Creek Heritage Preserve	very high	very high
Cowpens NBF	very high	very high
Mill Creek Forest and Seep	very high	very high
Island Creek Heath Bluff	very high	very high
NCDOT TIP: R-2824	very high	very high
Murrays Mill/Upper Balls Creek NA	very high	very high
Big Horse Creek Rare Plant Site	very high	very high
Broad River/Sandy Run NA	very high	very high
New Hope Springhead Swamp	very high	very high
Facebook Site	very high	very high
Davenport Road/Mountain View Rare Plant Site	very high	very high
Broad River: Floyds Creek	very high	very high
Catawba River: Hoyle Crk-Micol Crk	very high	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	very high	very high
Buffalo Creek: Tributaries N and S of SR 2047	very high	moderate
Buffalo Creek: Kings Mountain Res	very high	very high
Broad River: Brushy Creek	very high	very high
Peaked Top Rare Plant Site/Foothills Landfill	very high	very high
Jacob Fork West Corridor	very high	very high
Floyds Creek Tributary Rare Plant Site	very high	very high
New Bethel Rare Plant Site	very high	very high
Leepers Creek Heartleaf Site	very high	very high
Cliffside Steam Station	very high	very high
Rhyne Conservation Preserve	very high	very high
Glade Creek, Alex County	very high	very high
Richardson Creek trib above Toms Lake	very high	very high
Gunpowder Creek: South of Hudson	very high	very high
Taylor Blaylock Res	very high	very high
Little Gunpowder Creek Rare Plant Site 1	high	high
Little Gunpowder Creek Rare Plant Site 2	high	high
Buffalo Creek Rare Plant Site	high	high
Northern Catawba County	high	moderate
Rock Barn Solar Farm	high	high
NCDOT TIP R-2824	moderate	moderate
Third Creek Rare Plant Site	moderate	moderate
Knob Creek NA	moderate	moderate
Buffalo Creek: Northeast of SR 1903	moderate	moderate

Site Name	Current Resilience	High Development
West Shelby Mesic Slope	moderate	low
Cat Square Heartleaf Forest	moderate	low
Kross Keys NA	moderate	moderate
First Broad River: Crooked Run Creek	moderate	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	moderate	moderate
Catawba River: North Fork Mountain Creek	moderate	moderate
Catawba River: Lake James	moderate	moderate
Hogpen Branch Transplant Site	moderate	moderate
Jonas Road Rare Plant Site	moderate	extirpated
South Fork Catawba River, Henry Fork	moderate	moderate
No Business Creek, Boyd Tract	moderate	moderate
Broad River/Sandy Run NA	moderate	moderate
Buffalo Shoals Creek	moderate	moderate
Fox Knoll Farm	moderate	moderate
Forest City: Adj to Isothermal CC	moderate	moderate
Hickory Area	moderate	moderate
UT of Kings Mountain Res	moderate	moderate
Brushy Creek Headwaters	moderate	moderate
Smith Cliff/Henry Fork River	moderate	moderate
Simms Hill/Little River Uplands	moderate	moderate
Collinsville (Hughes) Creek Slopes	moderate	moderate
Burke County - Drowning Creek UT	moderate	moderate
Sandy Spring Church Springhead Swamp	low	low
First Broad River: Hickory Creek	low	low
Buffalo Creek: Ravine	low	extirpated
Buffalo Creek: Potts Creek	low	extirpated
Smith Cliff/Henry Fork River	low	low
Pott Creek	low	low
Northeast Lincolnton: UT Walker Branch	low	extirpated
Gunpowder Creek	low	extirpated
Killian Crossroads	low	low
Beaverdam Crk at First Broad River	low	low
Lincoln County, SR-1314	low	low
Levan Family Farm	low	low
Fanjoy Road Site	low	extirpated
First Broad River: Beaverdam Creek Tribs	low	low
South Mountains Pleasant Grove Uplands	low	low
NCDOT TIP R-3603A	low	low
Hickory Creek - UT (Shelby High School)	low	low

Site Name	Current Resilience	High Development
Boulder Creek Subdivision	low	low
Gateway Elementary School	low	low

Targeted Conservation Scenario

In the Targeted Conservation scenario, there are predicted to be 79 populations of dwarf-flowered heartleaf on the landscape (Table 6.9). The predicted resilience of the extant populations are as follows: very high (27); high (6); moderate (23); low (17); and 6 additional populations discovered to persist, with an unknown resilience. Six EOs within currently delineated populations not included in our Current Conditions analysis are predicted to persist, but resilience is unchanged because each of the populations are already predicted to be of very high resilience. When comparing future population resilience to current condition a few populations drop in their resilience category. One current population of very high resilience is predicted to drop to high resilience; two moderate populations are predicted to drop to low resilience; and five populations (one currently moderate and four currently low) are predicted to be extirpated due to urban development. Of the sixteen additional populations predicted to persist under this scenario, ten are in South Carolina, and six in North Carolina. We did not assess resilience for these additional populations, but it is worth mentioning that the last time these populations were detected, resilience was very high (2), high (1), moderate (11), and low (2).

Table 6.9. Predicted resilience categories for *Hexastylis naniflora* populations under the Targeted Conservation scenario, and comparison to current condition.

Site Name	Current Resilience	Targeted Conservation
DNR Peters Creek Heritage Preserve	very high	very high
Cowpens NBF	very high	very high
Mill Creek Forest and Seep	very high	very high
Island Creek Heath Bluff	very high	very high
NCDOT TIP: R-2824	very high	very high
Murrays Mill/Upper Balls Creek NA	very high	very high
Big Horse Creek Rare Plant Site	very high	very high
Broad River/Sandy Run NA	very high	very high
New Hope Springhead Swamp	very high	very high
Facebook Site	very high	very high
Davenport Road/Mountain View Rare Plant Site	very high	very high

Site Name	Current Resilience	Targeted Conservation
Broad River: Floyds Creek	very high	very high
Catawba River: Hoyle Crk-Micol Crk	very high	very high
South Fork Catawba R: Clark Crk, Miller Br, Cata Mem Hos	very high	very high
Buffalo Creek: Tributaries N and S of SR 2047	very high	high
Buffalo Creek: Kings Mountain Res	very high	very high
Broad River: Brushy Creek	very high	very high
Peaked Top Rare Plant Site/Foothills Landfill	very high	very high
Jacob Fork West Corridor	very high	very high
Floyds Creek Tributray Rare Plant Site	very high	very high
New Bethel Rare Plant Site	very high	very high
Leepers Creek Heartleaf Site	very high	very high
Cliffside Steam Station	very high	very high
Rhyne Conservation Preserve	very high	very high
Glade Creek, Alex County	very high	very high
Richardson Creek trib above Toms Lake	very high	very high
Gunpowder Creek: South of Hudson	very high	very high
Taylor Blaylock Res	very high	very high
Little Gunpowder Creek Rare Plant Site 1	high	high
Little Gunpowder Creek Rare Plant Site 2	high	high
Buffalo Creek Rare Plant Site	high	high
Northern Catawba County	high	high
Rock Barn Solar Farm	high	high
NCDOT TIP R-2824	moderate	moderate
Third Creek Rare Plant Site	moderate	moderate
Knob Creek NA	moderate	moderate
Buffalo Creek: Northeast of SR 1903	moderate	moderate
West Shelby Mesic Slope	moderate	low
Cat Square Heartleaf Forest	moderate	low
Kross Keys NA	moderate	moderate
First Broad River: Crooked Run Creek	moderate	moderate
NCDOT non-TIP Div 12 road const at SR 1115 South Fork Catawba River Jacobs Fork and Camp Creek	moderate	moderate
Catawba River: North Fork Mountain Creek	moderate	moderate
Catawba River: Lake James	moderate	moderate
Hogpen Branch Transplant Site	moderate	moderate
Jonas Road Rare Plant Site	moderate	extirpated
South Fork Catawba River, Henry Fork	moderate	moderate
No Business Creek, Boyd Tract	moderate	moderate
Broad River/Sandy Run NA	moderate	moderate
Buffalo Shoals Creek	moderate	moderate

Site Name	Current Resilience	Targeted Conservation
Fox Knoll Farm	moderate	moderate
Forest City: Adj to Isothermal CC	moderate	moderate
Hickory Area	moderate	moderate
UT of Kings Mountain Res	moderate	moderate
Brushy Creek Headwaters	moderate	moderate
Smith Cliff/Henry Fork River	moderate	moderate
Simms Hill/Little River Uplands	moderate	moderate
Collinsville (Hughes) Creek Slopes	moderate	moderate
Burke County - Drowning Creek UT	moderate	moderate
Sandy Spring Church Springhead Swamp	low	low
First Broad River: Hickory Creek	low	low
Buffalo Creek: Ravine	low	extirpated
Buffalo Creek: Potts Creek	low	extirpated
Smith Cliff/Henry Fork River	low	low
Pott Creek	low	low
Northeast Lincolnton: UT Walker Branch	low	extirpated
Gunpowder Creek	low	low
Killian Crossroads	low	low
Beaverdam Crk at First Broad River	low	low
Lincoln County, SR-1314	low	low
Levan Family Farm	low	low
Fanjoy Road Site	low	extirpated
First Broad River: Beaverdam Creek Tribs	low	low
South Mountains Pleasant Grove Uplands	low	low
NCDOT TIP R-3603A	low	low
Hickory Creek - UT (Shelby High School)	low	low
Boulder Creek Subdivision	low	low
Gateway Elementary School	low	low
First Broad River (North Carolina)	n/a	present
First Broad Hop-Hornbeam NA	n/a	present
Big Island Carolina Hemlock Bluff	n/a	present
Cherokee Creek/Bonner and Robin School Roads	n/a	present
Arrowood Branch	n/a	present
Cherokee Creek/SC 11	n/a	present

Viability Summary

Urban development is predicted to have negative impacts on several of the current populations under all of our scenarios. However, this loss of resilience and extirpation of a few populations

is offset by the fact that several additional populations were found to persist in the Status Quo and Targeted Conservation scenarios. In the High Development Scenario, there is a predicted loss of 6 populations, with loss of resilience in several additional populations. Regardless of the scenario, the majority of the populations expected to persist on the landscape in 2040 are of at least moderate resilience.

Given the relatively high number of populations across each scenario, redundancy remains similar to current conditions. That is to say, there appears to be adequate redundancy within the range of dwarf-flowered heartleaf to withstand the impacts of localized press catastrophic disturbances, however the species range is relatively small, making it potentially vulnerable to long-term catastrophic events, such as climate change.

Given that dwarf-flowered heartleaf has a very limited range, and after consulting with experts, we decided delineating representative units was not appropriate for this species. It is worth noting that in two of our scenarios (Status Quo and Targeted Conservation), additional populations are found to persist in South Carolina, an area where we have relatively few current populations. As discussed below, we believe there are opportunities to find additional populations based on the amount of predicted unoccupied potential habitat. Although we did not delineate representative units, we believe our scenarios do not predict declines in species representation.

Table 6.10. Viability summary for *Hexastylis naniflora* under 3 future scenarios (projected to year 2040) and compared to Current Condition.

	CURRENT	STATUS QUO	HIGH DEVELOPMENT	TARGETED CONSERVATION
VERY HIGH	28	27	27	27
HIGH	5	6	4	6
MODERATE	26	23	25	23
LOW	19	17	16	17
EXTIRPATED	n/a	5	6	5
PERSISTING	n/a	2	0	6
TOTAL	**78**	**75**	**72**	**79**

Opportunities for Additional Conservation

Although our scenarios focus on areas where dwarf-flowered heartleaf have been found in the past, the Maxent model identifies a number of areas as high quality potential habitat for the species that falls outside the immediately known occurrence areas. A few of these areas are detailed below (Figure 6.2).

1. West of the city of Lenoir, south of Highway 90/Adako Rd., north of Highway 64 within Caldwell County. This area identifies a large block of potential habitat. This area falls just outside the administrative boundary of the Pisgah National Forest. The bluffs and tributaries along the Johns River are identified as the best habitat, but there is also ample habitat identified along the forested areas of Celia, Husband, Abingdon and Greasy Creeks. The only known occurrence within this area is associated with Abingdon Creek and is under a conservation easement.

2. Henry Fork River bluffs and tributaries east of Highway 18 within Burke County. A historic element occurrence is present by the Burke County line, but the entire area is identified as good quality potential habitat for the species where forested habitats remain.

3. South West corner of Catawba County west of Highway 321. Several disjointed patches of high quality potential habitat are identified in this region associated with the river and creek slopes. Rock Creek, Jacob Fork River, Pott Creek, and their associated tributaries all contain blocks of potential habitat. A number of element occurrences are identified within this area, but additional habitat is identified both upstream and downstream of the known occurrences.

4. Clark, Pinch Gut, Maiden, and Allen Creeks, north of the town of Maiden. The slopes along these creeks all contain quality potential habitat. Known element occurrences are in the general area, but none are situated within the creeks listed.

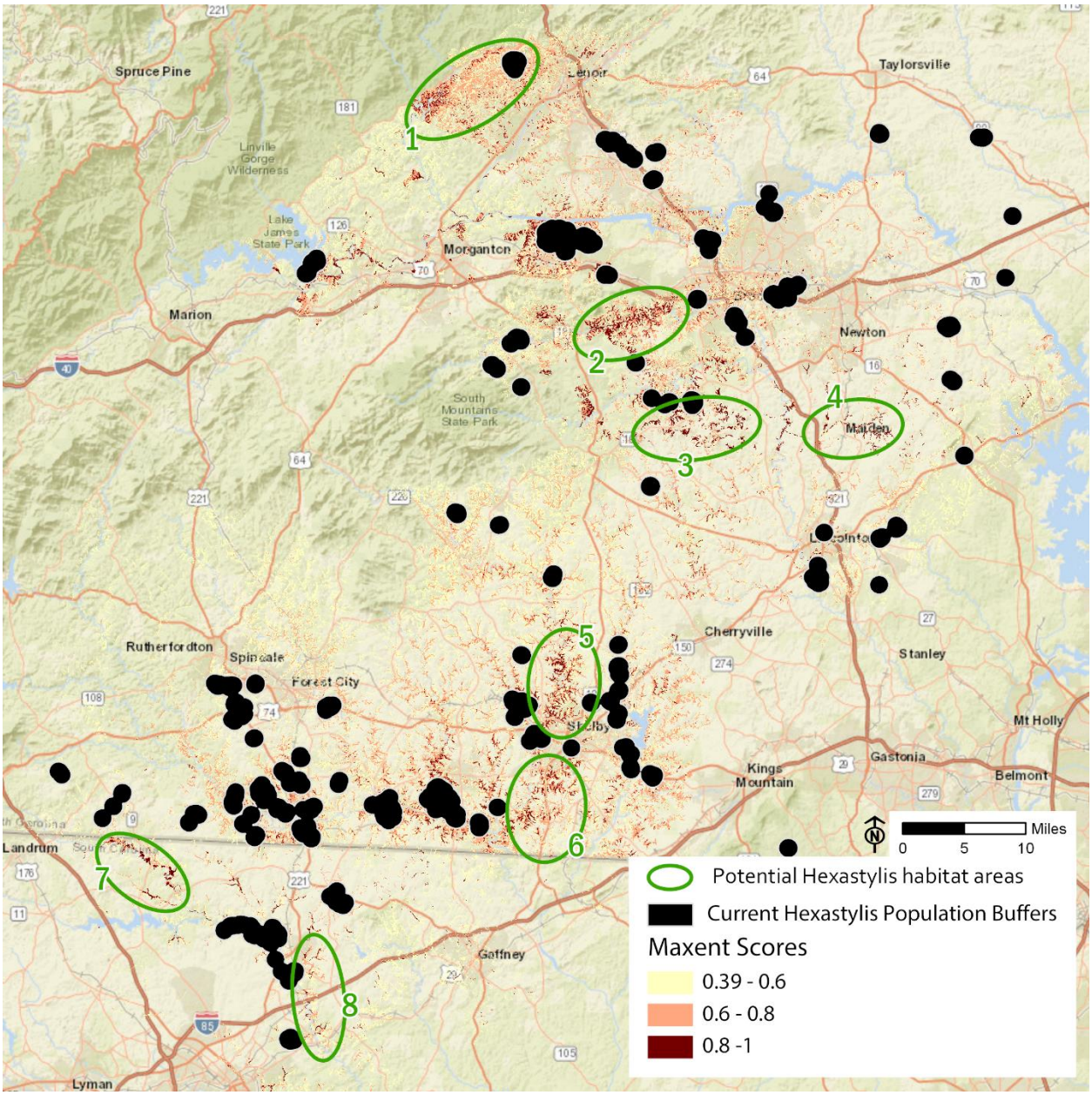
5. First Broad River North of Highway 74, Rutherford County. Two older element occurrences are located within this area, however, the forested bluffs along the First Broad River and associated tributaries are identified as good quality potential habitat in many additional upstream and downstream areas in this system.

6. Hickory Creek, Sulphur Springs Branch (Little Hickory), Shoal Creek, and tributaries draining into First Broad River South of the Town of Shelby, north of the South Carolina border. The town of Shelby has likely disconnected this site from area 5 listed above. Here, slopes along the creeks and tributaries draining into the First Broad River are identified as potential habitat more so than the slopes along the First Broad River themselves. There in only a single element occurrence known upstream along Hickory Creek.

7. North Pacolet River and Obed Creek, north of where they join. The majority of potential habitat falls along the slopes of the North Pacolet River. Two older element occurrences (1991 last observation) are found in the tributaries draining into the North Pacolet River, and many occurrences are found further upstream. The habitat model suggests that additional undiscovered habitat areas are present.

8. Pacolet River and Island Creek, north of Peters Creek, downstream of the Pacolet River dam. This area displays limited amounts of good quality potential habitat. Recent element occurrences are present in the upper headwaters of Peters and Zekial Creeks (Zekial Creek drains into Peters Creek) and in areas north of the Pacolet River dam, but none are known along the areas identified in this immediate area.

Figure 6.2. Areas identified as high quality potential habitat by Maxent model for *Hexastylis naniflora* that fall outside the immediately known occurrence areas.



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